QUEENSLAND AGRICULTURAL JOURNAL

VOL. VI. DECEMBER, 1916. PART 6.

"THE QUEENSLAND AGRICULTURAL JOURNAL."

Up to the present this Journal has been issued on the first day of each month. This date of issue has been found of late to be inconvenient, as it was not possible to publish the latest up-to-date agricultural returns, markets, &c., for the previous month. More especially is this the case with returns from the Queensland Agricultural College connected with the egg-laying competitions, milking results for the month, sales of stock, &c. In order, therefore, to enable us to bring them and similar returns up to the date of publication, it has been decided to issue the Journal on the 10th of each month instead as heretofore on the 1st of the month. A further advantage will be that, whereas often articles of immediate public interest have had to be held over for publication, this delay will be obviated.

THE UNITED INSURANCE COMPANY, LTD.

PURELY AUSTRALIAN.

Give this Company your FIRE, MARINE, and ACCIDENT Insurance Business.

AGENTS EVERYWHERE. Offices at Brisbane, Rockhampton, and Townsville.

ERNEST WICKHAM,
Manager for Queensland.

Agriculture.

THE "LUCE" CANE-HARVESTING MACHINE.

It will be remembered by readers of this Journal who are interested in the sugar industry that we published an article in the issue of the Journal for March, 1914, and a further notice in June of the same year, on the successful invention of a cane-harvesting machine by Mr. George D. Luce, of Louisiana. Since that year Mr. Luce has so perfected the machine that it performs the work in a manner which appears to be absolute perfection. The machine of 1914 was shown at work at Andubon Park, Louisiana, on a field of 30 acres of cane; and those planters who saw it at work were astonished at its performances, and pronounced it a complete success. That machine weighed about 3½ tons. The new machine and its performance are described in the following article which we take from the "Queensland Sugar Journal" of 7th September:—

Readers of "The Australian Sugar Journal" are already familiar with the experimental work which Mr. Luce, of Louisiana, has been carrying on during the past fourteen years in connection with the development and manufacture of a self-contained harvester that will strip, top, and load cane on the field. It is gratifying to know that at last (according to recognised authorities) he has established, beyond a doubt, the efficiency of the final machine which he has now put on the market as a standard commercial outfit. There is only one qualification attendant on the use of this apparatus, and that is that it must be used only in "machine cane." By "machine cane" is simply meant cane that is grown in rows and is reasonably straight. The rows must be far enough apart to allow of the passage of the machine—say about 4 ft. 6 in. to 5 ft. "Reasonably straight" cane eliminates cane that has been forced flat on the ground; but even this condition is easily surmounted when an auxiliary crew, as explained further on, is used.

Cane that is over on the ground will, naturally, be missed by the pick-ups, which operate a few inches above the surface; but ordinary wind-blown crooked cane and the average leaning cane (crooked or otherwise) are brought into the machine in an upright position by these pick-ups. Very crooked cane and extremely short suckers will need the attention of the auxiliary crew in the manner explained later.

Another important consideration in handling cane with this machine is the condition of the ground over which the harvester has to be worked. Special bottom cutters just skim the surface where the cane is ridged up; so it follows that the surface of the ground should be free from stones and stumps, since these will effectively obstruct the bottom cutting discs.

These are the simple conditions called for under the heading of "machine cane," and where they are found the "Luce" harvester, it is claimed, will harvest cane ready for the mill at the extremely low figure of from 7d. to 10d. per ton. These figures are based on Louisiana conditions; but investigations have shown that about 80 per cent. of the Queensland cane is "machine cane," and that the conditions are very similar to those obtaining in Louisiana.

The following table of operating costs is compiled from data covering a period of two years, and, while subject to modification, may be accepted as a close average.

The cost of labour in Queensland will, no doubt, alter these figures to some extent; but these can be easily calculated according to the rates of pay in the various sugar centres of Queensland. The efficiency of the operating crew, the condition of the ground worked over, the condition of the cane, and the tonnage per acre would all affect the results, so the costs must necessarily fluctuate:—

COST PER DAY'S OPERATION.

	£	s.	d.
Operating crew, 2 men	2	3	0
Fuel	1	1	0
Oil and grease	0	6	8
Interest, depreciation, and repairs	1	0	6
Auxiliary crew, 5 men	1	0	6
	£5	11	8

Seven acres per day is a fair average; so that the cost per acre harvested would only work out at 16s.; and, allowing 20 tons of cane per acre, this would put the cost per ton of cane harvested at 9½d.

As has been mentioned before, these are Louisiana figures; but the only additional cost here, as far as can be seen, would be in the price of labour; but, allowing for double the cost of labour, as shown in the above figures, the cost per ton harvested would not exceed 13d. to 14d. per ton.

We have mentioned an auxiliary crew of 5 men. The function of these men is to follow the machine, and trim those stalks of cane that sneak through without being properly topped and stripped—about 7 per cent. to 10 per cent.—and consisting of extremely short and crooked cane. (With the 1917 model machine the discharge chute has been lengthened and the motor increased in power, so that a dray can be trailed behind the motor and the cane discharged direct into the dray.) Where patches of flat cane are encountered, two members of this crew, one on each side of the row, can easily bring the flat cane up, so that it can be engaged by the pick-ups.

Of the operating crew of two men, one gives his whole attention to guiding the machine through the rows, raising and lowering the

bottom cutters as may be necessary; and the other gives his undivided attention to the engine and machinery. The harvester is at all times completely under the control of either of these two men, so that either can instantly stop the machinery.

An important feature of the "Luce" harvester is that it can be used as an all-round-year machine. When the harvesting season is over, the harvesting mechanism can be removed bodily from the tractor, and the latter used for ploughing, hauling, and any general farm purposes. This cuts down the burden of interest and depreciation which each ton of cane harvested would otherwise have to bear. This is an economic feature which will appeal to the progressive planter who is seeking to cut his costs to the last farthing.

Another very important economic feature, apart from all saving of labour and its attendant worries, is the fact that the use of the harvester actually increases the sugar yield by no insignificant amount. The usual cut made by any operator is a diagonal or slanting cut. By the time this stalk gets to the mill, this little lop-sided cone at the end of the stalk is just about dry, and yields little or nothing to the mill. Then, there is also the complement of this little cone left in the ground, which must also be considered as a loss.

The machine not only gives a square clean cut, but by so doing, adds the sum of two cones to each stalk, and actually cuts at least 2 in. lower than the most careful hand cutter (who hates to get too close to the ground for fear of dulling his cane knife). The sum total of these apparently insignificant additions to the cane from any acreage is shown in an increase of from 5 per cent. upwards in the sugar yield—an increase that is practically "velvet," and can be had in no other way. It must be borne in mind that this additional piece of stalk delivered by the machine is from the very richest part of the cane—viz., the bottom.

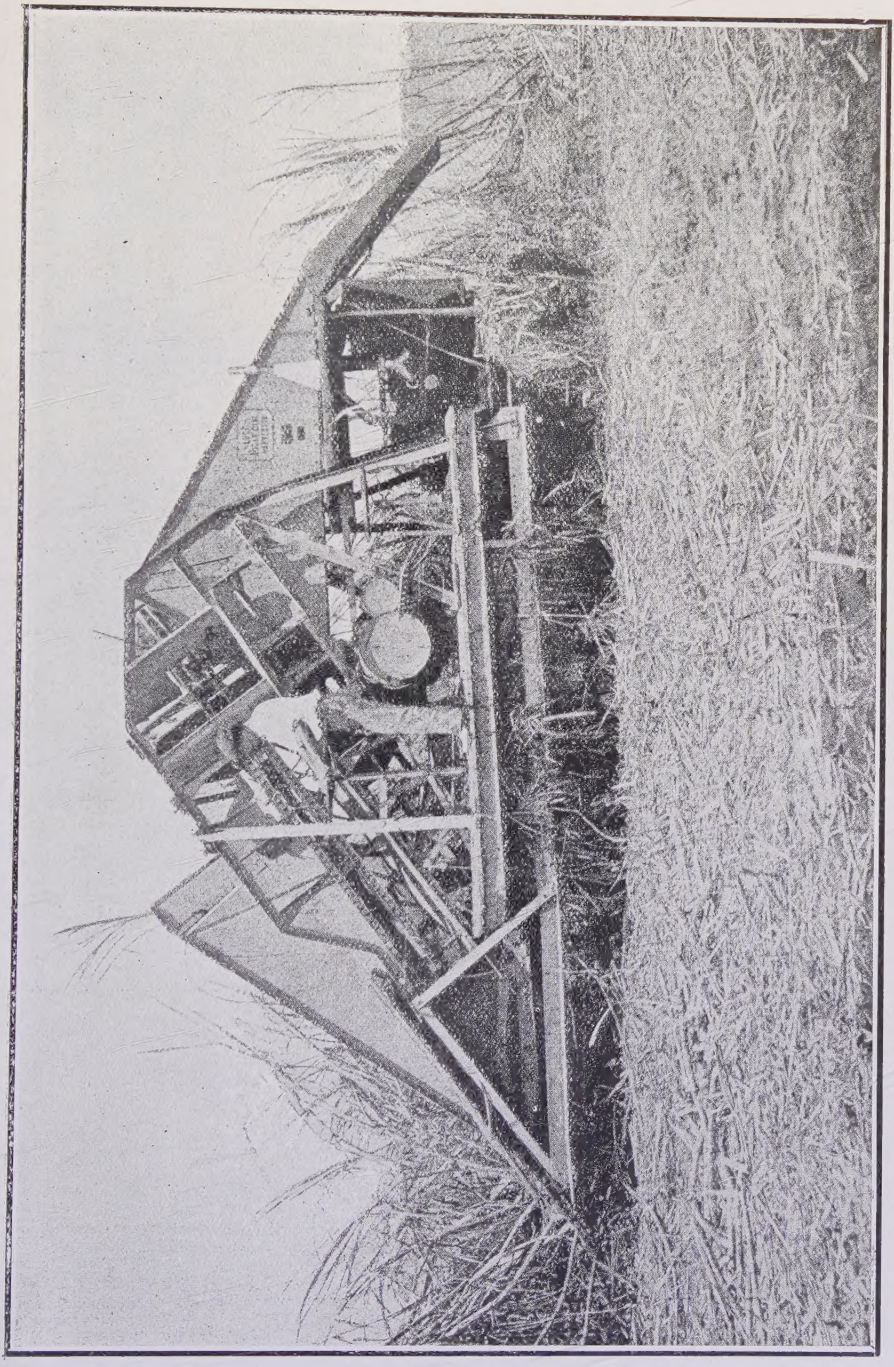
The working weight of the machine is $8\frac{1}{2}$ tons, and this is so distributed on the caterpillar traction system that the machine will operate over very soft ground; in fact, the actual weight per square inch of bearing surface of the creeper is less than that of the average man.

The soil in Cuba is of a loose, loamy description; but absolutely no trouble is experienced on this account.

The photographs shown illustrate the 1916 model machine at work in Cuba, particulars of which are as follow:—

Photo. No. 1.—Luce cane-harvester entering row Colonio "Antonia," near Aguacate, Cuba.

Photo. No. 2.—Operator's side of "Luce" cane-harvester in same cane as Photo. No. 1. Note the mud and trash on the creeper and wheels. These photos. were taken the morning after an all-day tropical rain, when it was too muddy for the oxen or the ox-carts to work; also, the cane was wet and leaves sticky, which conditions, while not good, did not interfere in any way with the operation or quality of cane delivered.



No. 1.

PLATE 37.

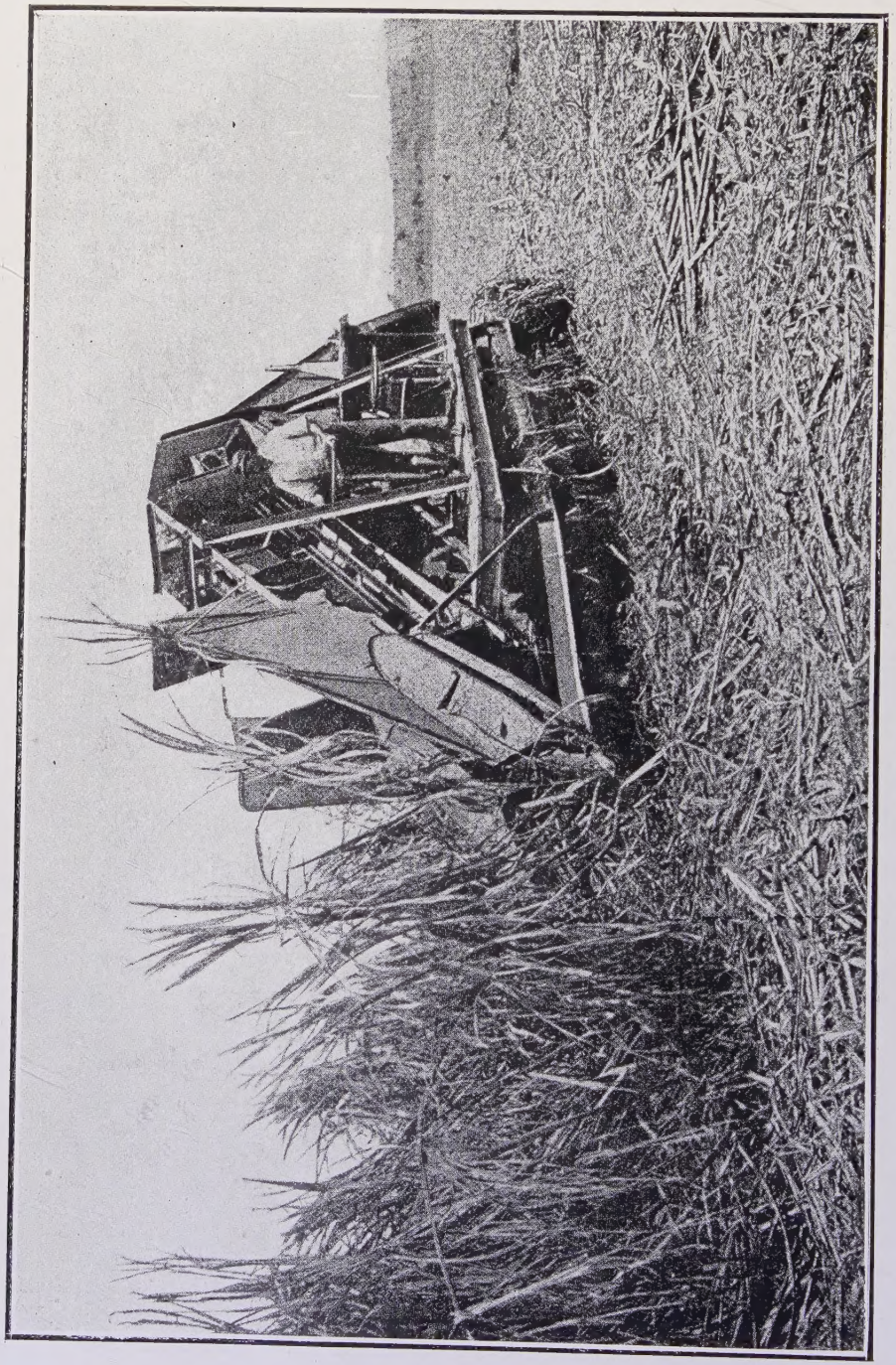


PLATE 38.

No. 2.

Photo. No. 3.—Square-in-front view in "Antonia" cane, showing the badly tangled condition of cane handled. A machine that will harvest this cane "better than by hand" (to use the owner's own opinion) will handle practically any condition of cane grown in rows.

Photo. No. 4.—Close-up view of cane, picked up at random by a native who had no idea of selecting any special sticks.

The Australian agents of this machine—viz., The Queensland Machinery Co., Ltd., 142-156 Albert street, Brisbane—inform us that

No. 3. PLATE 39.

the Cuban sugar people and the Louisiana sugar people are showing their faith in this machine, inasmuch as the Luce Company Inc. is very busy now on the manufacture of machines for different estates in these countries. In addition to the machines already in hand, the President of the huge Cuban Cane Sugar Corporation has ordered two machines for next season; the President of the Central Rosario Estate has ordered one; and the United Fruit Company and the Cuban-American Sugar Company are also negotiating at the present time for several machines.

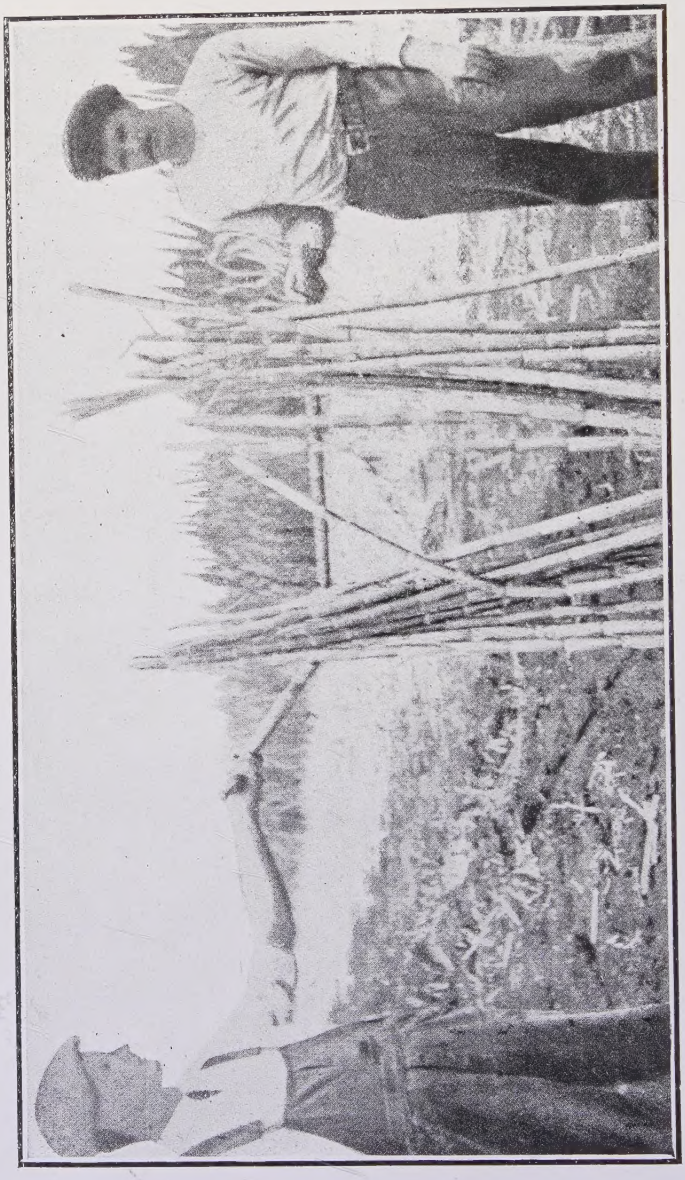


PLATE 40.

No. 4.

PLANTING IMMATURE SEED POTATOES.

The Department of Agriculture in Ireland recommends the planting of whole potatoes, which should be digged before the tops have dried off. It is considered that the dying of the tops is a sign that deterioration has set in, and by digging before this, the seed-tubers are obtained at the time of their greatest vigour. These immature tubers are sprouted before planting, which, it is claimed, increases the yield by 25 per cent., and the crop matures earlier, and can be digged earlier. Sprouting also enables planting to be done when weather and soil conditions are most favourable, as the seed can be kept out of the ground, if necessary, for a week or two without detriment or loss of time. With sprouted seed there are fewer misses and less trouble from weeds, as the strong foliage chokes or checks weeds. Not more than two sprouts, and from the rose end, are allowed to remain. All experiments in this State have confirmed the value of immature seed (says the "Australasian").

MARKET GARDENING.

TOMATOES.

The tomato figures largely in our local markets, and also in our exports to the Southern States; hence, any experiments with new varieties will be welcomed by market gardeners in this State. Mr. W. McLean, of Spring Vale, Boggabri, New South Wales, has been experimenting with certain varieties, about which we have received the following interesting notes:—

Logan's Giant is an extra large tomato, and ripens early—a scarlet colour. It grows on a very strong vine.

Beefsteak is another large variety, as large as Ponderosa, and differing from it only in the colour, which is a brilliant crimson scarlet. This is a late variety, and very suitable for market, as it comes in when many varieties are going off.

New Hummer is a globe variety, and a strong grower. The fruits are quite round and large; a good variety for market.

New Early John Bear is the result of fifteen generations of improvement and selection for earliness, quality, shape, flavour, colour, and shipping quality. Tomato-growers should give this tomato a trial.

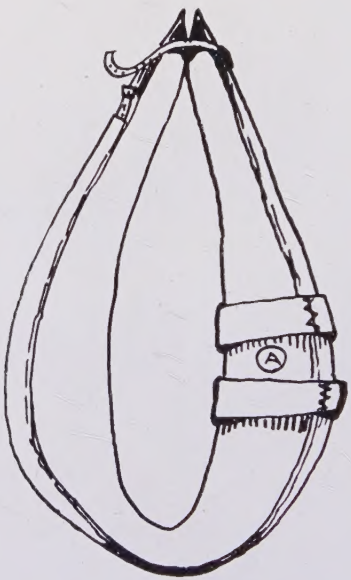
The Horse.

SORE SHOULDERS IN A HORSE.

Mr. J. F. Keane, Carbeen, Mareeba, writes:—

As soon as a "touch" is noticed, cut two strips of gunny bag 3 in. wide, and wrap them two or three times round the collar in the form of bandages—one above and one below the bruise. Fasten them by doubling the end in and stitching as shown.

A.—Place in the collar which has caused the bruise. The packing-needle may be allowed to take up the leather beneath, for one or two



stitches. This keeps the bandage in place while the collar is lying about. When in use, tighten the bandage to prevent it slipping. In three days the slight swelling and tenderness of that premonitor to a sore shoulder, known as a "touch," will have entirely disappeared, without any loss of hair. Then the bandages should be taken off. Before doing so, give the collar between the bandages a good hammering with the bottom of a soda-water bottle. This collar bandage trick may also be used to relieve established sores, often leading, with the help of a little cleanliness and a drop of carbolic oil, to their healing while in work.

Viticulture.

THE WINE INDUSTRY.

By G. A. GATTINO.

PROPER BUILDINGS AND CELLARS.

The Wine Industry is one of the least expensive to carry on, so far as requirements are concerned.

While other industries, to be made profitable, require heavy capital and must be developed on a large scale before profits can be realised, the Wine Industry can be carried on by the small grower as easily as by the big grower, and the same applies to the small wealthy speculator who does not grow, but who wishes to manipulate or manufacture wine by buying the grapes from the grower. For this reason you find that any room or shed is used for making wine. Often the same place is the store for maize, vegetables, cheese, &c.; and quite frequently you may find the cask of wine near to a horse manger or cow stall. Such environment is absolutely detrimental to good wine.

It is certain that all growers cannot afford to provide conveniences for wine, and the consequence is that poor wine is often the result.

Many growers use the same room for pressing, clearing, fermenting, and storing the wine; but while the small grower may do so the real winemaker, who desires to have a standard of excellence, must provide suitable buildings. These will meet all the required conditions for making wine successfully, and give adequate accommodation for perfect and quick work, thereby saving time and labour.

It is needful, therefore, to describe the necessary rooms without using technical terms, so that it may be plain to even the small grower who can possibly take advantage and secure a better result.

To properly make wine, the requirements are—

(1) A place to class and press the grapes and ferment the must. This we will call the *Wine Press or Fermenting Shed.*

(2) A place for maturing the wine, which is the *Cellar.*

(3) Another called the *Store* for the conservation, packing, or holding of the matured wine.

Generally the *wine press* or *fermenting shed* and the *cellar* are in one room, which is a big mistake; the conditions of these two places really being quite different.

The temperature that a must requires during the period of tumultuous fermentation is different from the temperature of a wine in course of maturing; and, again, if in the cellars some wine remains of previous vintages, as soon as the new must is in tumultuous fermentation, the old wine runs the risk of changing and becoming bad.

The winepress shed has to be situated on ground level, and the floor should be 12 to 16 ft. above the cellar floor.

This shed should be provided with openings towards the south, and properly placed to allow of sufficient light to enable work to proceed without need of lamps.

A properly located building will keep during the harvest season a mild atmosphere, which is wanted for good fermentation of the must—that is to say, the interior will have a temperature varying from 30 to 65 degrees, which is necessary for the tumultuous fermentation to develop in a regular and complete way. With a higher temperature, the fermentation would become too rapid; and with a lower, too slow.

In the fermentation shed there must be no lack of air currents, otherwise the carbonic acid gas developing from the fermentation, being heavier than the air, would stagnate in the room to the detriment and risk of life to the persons working.

This shed should be large enough to contain all vats for the must, with plenty of room to operate easily and sufficient space to select the grapes and to place the machines for raking, crushing, and pressing the grapes; large wood or cement vats to work the same; cases, baskets, &c.; and a large entrance door to allow carts to unload the grapes right inside.

It is, however, better to have the crushing of grapes separate from the fermenting of must, which would give shelter to the working man from untimely atmospherical changes of weather and would give more working accommodation.

By building the floor of the crushing shed at a higher level than the fermenting shed, the must, by a system of pipe connections, would run into the vats, where it will ferment.

The floor of the crushing and of the fermenting shed should be of cement, as well as the walls, for about 4 or 5 ft. at the sides, so that in case of emergency, the floor could be utilised to store the surplus grapes; and by giving the floor a natural drain slope towards a small cemented sub-well, no juice would be lost or wasted.

In next month's issue I will write about the cellar, which is the most interesting room in the matter of enology.

The Orchard.

NOTES IN CONNECTION WITH A CONFERENCE OF FRUIT-GROWERS, HELD AT THE LAND COURT ROOM, EXECUTIVE BUILDINGS, BRISBANE, ON WEDNESDAY AND THURSDAY, 18th AND 19th OCTOBER, 1916.

The Conference was opened at 10 a.m. on Wednesday, 18th October, 1916, by Hon. Wm. Lennon, Minister for Agriculture, who welcomed the delegates and expressed the wish that the Conference might arrive at some thorough scheme of co-operation.

Those present included delegates from the following Associations:—

Ballandean—W. H. C. Laird.
Beaudesert—A. H. Balmer.
Beerwah—G. F. Nicklin.
Bli Bli—F. Pashen.
Bowen—Jas. Maltby.
Brighton—A. J. Buchanan.
Buderim Mountain—Jas. Lindsay.
Burrum—N. Richards.
Caboolture—C. R. Warwick.
Cleveland— ——. Hugonin.
Cooloolabin—T. Ivens.
Cooroy—G. G. Dennis.
Glass House Mountains—F. Gowen.
Grantham—A. Philp.
Gympie—Z. D. S. Skyring.
Howard and Burrum—T. I. Reaney
Ipswich Horticultural—A. Butchart
Landsborough—W. Ellison.
Mapleton—W. J. Smith.
Maroochy—G. T. Whitaker.
Montville—A. Bowser.
Mount Gravatt—J. Flynn.
Nambour—G. Pitman.
Perwillowen—W. W. Mallet.
Queensland Acclimatisation—L. G. Corrie.
Queensland Farmers' Union:
Buderim Mountain Branch—H. V. Fielding.
Highlands Branch—A. Holton.
Mooloolah Branch—W. J. Redfern.
Palmwoods Branch—S. J. Hobson
Woombye Branch—J. Howe.
Eumundi Branch—G. Gridley.
Cooroy Branch— ——. Walker.
Cooran (District Lilley Council)—J. Turnbull.
Maroochy Branch—W. H. Burton.
Didillibah Branch—J. Gosden.
Esk and Toogoolawah Branch—G. H. Graham.
Glass House Mountains—C. R. Wilson.
Queensland Horticultural—E. W. Bick.
Queensland Affiliated Societies—F. Woodroffe.
Queensland National—J. Macdonald and J. Bain (secretary).
Queensland Fruitgrowers' Industrial Trading Society:
Brisbane—C. Rose.
Brisbane—J. Rose.
Howard—E. J. Stafford.
Tinana—F. Copley.
Queensland Nurserymen—T. H. Wood, John Williams, and W. Soutter.
Redland Bay—H. J. Moore.
Rochedale—A. C. Woods.

Rosemount—A. P. Myers.
Rockhampton—F. W. de Little.
Roma Street Market—H. Stanton.
Stanthorpe—H. E. Lyons.
Sunnybank—D. M. Henderson.
Terror's Creek—D. F. Stewart.
Turbot Street Market—A. E. Chave.
Victoria Point—D. N. Colbourn, junr.
Wellington Point—J. W. Dunlop.
Woombye—E. H. Davies and J. T. Wilson.
Wynnum—H. Randall.
Zillmere—J. Mackie and F. M. Ruskin.
Coolum—F. O. Venning.
Cooroy—H. I. H. Ross.
Logan—I. Dennis.

Upon the Conference being opened by the Minister, Mr. Philp proposed a vote of thanks to Mr. Lennon for acceding to the request for a Conference being called. Mr. Maltby seconded the motion, which was carried with acclamation.

Mr. Lennon thanked those present, but pointed out that he must give credit where it was due; and he considered the credit of getting the Conference together was due to Mr. Benson. He also stated his pleasure at the number that had responded to the invitation.

Mr. Benson then delivered his Chairman's Address, which was prefaced by a few remarks as to the necessity for such a Conference being called, and asked those present to put their best brains, thoughts, and abilities into making the Conference a successful one not only for individuals but for every fruitgrower in the State:—

THE NECESSITY FOR COMBINED ACTION BY FRUITGROWERS, IN THE HANDLING, MARKETING, DISTRIBUTION, AND UTILISATION OF FRUIT AND VEGETABLES.

Being firmly convinced that the Fruit Industry of Queensland is rapidly approaching a stage when our presently existing markets will be unable to deal effectively with the produce of our Orchards and Plantations, I have decided to bring the question of organisation prominently before you at this Conference, as I am certain that the future success of the Fruitgrowing Industry of this State depends very largely on the manner in which it is handled commercially.

In my opinion, the time has now arrived when producers should realise that the period of individual effort has passed, and the advent of combined and organised enterprise is the only possible means of profitably disposing of their produce.

During recent years the demand for fruit has frequently been in excess of the supply, with the result that very satisfactory prices have often been obtained and the necessity for organised effort has not made itself felt very keenly. There have, however, been periodical gluts of various kinds of fruit, and during such periods there have been spasmodic outcries, pointing out the necessity for organised effort and the advantages to be derived by co-operation, which die out as soon as normal conditions prevail; and no definite action to prevent or even minimise the loss caused by such gluts has been taken or is apparently likely to

be taken by fruitgrowers under existing conditions. Present conditions are, however, likely to become materially altered in the no very distant future, as the satisfactory prices that have been obtained for fruit and the profits that have been made by many fruitgrowers have induced a very considerable number of people to take up fruitgrowing, with the result that there has been a big increase in the demand for orchard lands both in the older-established as well as in new districts, and the area devoted to the growing of all kinds of fruits is rapidly increasing; and this increase in area naturally means an increase in production, particularly under the more favourable weather conditions we are experiencing.

If, therefore, we have experienced glutted markets in the past, it is only natural to expect that with an increased production such gluts will recur and become intensified unless steps are taken to prevent this undesirable condition being brought about. Even at the present time, although the fruitgrowers in the Southern part of the State have little to complain about in the matter of the prices realised for their fruit, our Northern growers are far less favourably situated, and many fine orchards are being abandoned in Northern Queensland owing to the inability of their owners to obtain a remunerative return for their fruit. I have recently received a number of detailed reports from Mr. S. C. Voller, who has been acting temporarily as Instructor in Fruit Culture in the North; and his account of the condition of the orchards and of the despair of their owners, owing to lack of markets and marketing facilities, is nothing short of pitiable. Many growers have either lost heart entirely or have become so despondent that, unless there is a decided improvement in the conditions now existing, fruitgrowing as an industry will be abandoned from Bowen to Cooktown, and the land devoted to fruitgrowing will return to a state of Nature, which, in many instances, it is already doing. This is a very serious matter indeed, and one that, in my opinion, deserves the most careful consideration; and anything which can be done to place the industry on a more satisfactory basis will not only be of benefit to individual growers but to the State as a whole, as we cannot afford to neglect any industry in the North that will yield a remunerative return to the owner for the time and labour expended on it. The question, therefore, arises here: Can the conditions governing the fruitgrowing industry of this State be improved? and this can only be answered by carefully considering our present methods and determining in what respects they are deficient.

In the first place, let us consider the orchards themselves, and see whether they can be improved, as we must grow the fruit before we have it to sell. Then what sells best and is most easily disposed of—good fruit or bad? Every grower and every dealer will, I am sure, say good fruit, and that he has no difficulty to dispose of first-class lines even in a full market. Therefore, why grow bad? By bad I do not necessarily mean small or second-grade fruit, but poor varieties that are either deficient in flavour, appearance, keeping, or carrying qualities, and which must in consequence be disposed of as quickly as possible or become unsaleable. Why grow such varieties when good fruit can be grown? The first step

must, therefore, be taken in the orchard—get rid of inferior fruits and fruit trees which are not profitable, frequently spoil the market for good fruit, and are breeding-grounds for all kinds of pests. Get rid of the bulk of the rubbish that is often the cause of glutted markets, and you will have fewer gluts and better prices for first-class fruits.

In the second place, let us consider how the growers handle their fruit, and whether any improvement can be brought about in this direction. Well, I think there is room for improvement. How many growers grade and pack their fruit as it should be? And how many brands of Australian fruit compare favourably in appearance and general get-up with the Oregon or Californian apples now on this market or with the citrus fruits of California or Italy? Why, then, do imported fruits always realise high prices? Simply because the buyers can depend on what they are purchasing and are prepared to pay high prices in consequence, much higher than they will give for locally grown fruit, as they know that in the majority of cases they cannot depend on the grade or pack. Good fruit, well graded and well packed, will sell in a glutted market when the same fruit if offered for sale in an unattractive manner cannot be disposed of. Many growers have, therefore, a good deal yet to learn respecting the handling of their fruit, and there is plenty of room for improvement. Every good business man who has goods to dispose of knows that the secret of success is to display such goods in the most attractive form, as the better the goods are displayed the greater the chance of their meeting with a ready and satisfactory sale. This being so, why will growers of fruit still persist in marketing their produce carelessly, and neglect to place it before the buyers in the most attractive form?

These two considerations—the growing of only good fruit, and the placing of it on the market in the best possible condition—are in the hands of individual growers to a very large extent, as they are matters which come under their immediate control; but there are many other matters connected with the sale of fruit which they are unable to deal with single-handed, and which can only be dealt with by organised effort.

I refer to such matters as—

The handling and carriage of fruit by our railways and coastal steamers.

Regulating the supply of fruit to the various markets so that no one market shall be over-supplied whilst others are under-supplied.

Forwarding fruit direct to provincial markets instead of concentrating the whole of it in the capital cities.

Encouraging the consumption of fruit.

Improving the means of distributing fruit so that it shall be obtainable by consumers throughout the Commonwealth at reasonable rates.

Opening up new markets.

Utilising surplus fruits.

These are matters that can only be dealt with effectively by organised effort, as are many others that will be dealt with later on. The question, therefore, arises here: Are fruitgrowers to bring about the necessary organisation which will be powerful enough to carry out the necessary reforms? and this is the question I wish every member of this Conference to seriously consider, as the success of such an organisation will depend very largely on the right steps being taken at its initiation.

In order to place the matter as concisely as possible before you, I wish to point out that, in my opinion, the only possible chance of establishing such an organisation on a sound commercial basis, without which it has not the slightest chance of success, is the formation of a powerful fruitgrowers' union, in which every commercial fruitgrower in the State is financially interested, and whose rules and regulations he binds himself to comply with implicitly. No half measures will suffice: The union must be a cast-iron one, and every member must be loyal to it. This is the only royal road to success in co-operative effort; and the failures of hundreds of so-called co-operative enterprises are due to the fact that the bond of union is not sufficiently strong and members are not loyal to their association, and thus bring about the defeat of the very objects for which the association has been established. This is the experience of all great co-operative enterprises, and it has only been by the enforcement of the statute regulations compelling every member of the co-operative body to be absolutely loyal to his association that success has been attained. There is an old saying that "Union is strength"; but there is also another, and that is "That the strength of a chain is that of its weakest link." This simile is especially applicable to co-operation, as if there is one weak link, such as the disloyalty of individual members, the whole undertaking ends in failure; and to guard against this weak link it is essential that every member must be so bound to his association, financially and otherwise, that he is unable to break away, and realises that his only chance of success is to be absolutely loyal.

This may seem hard to many, as it means giving up one's own right to do as one wishes and working for one common cause, for the benefit of one's fellow fruitgrowers and incidentally for oneself, as it is impossible to benefit the association without benefiting every member thereof.

A union such as I have outlined should be controlled by one Central Executive with branches in every fruitgrowing centre who are in constant and direct touch with the Central Executive, the members of which are appointed by the district branches. The Central Executive should have at its head a keen business man of wide experience and undoubted ability, as the success of the undertaking will depend very largely on the executive head. His position should be a permanent one, and it should be his duty to keep in touch with all markets and with every phase of the fruit industry as well as with the secretaries of every branch.

Then, secretaries must have a good general business knowledge, and must keep in direct touch with every member of their branch so that they are in a position to advise the official head of the Central Executive of all local requirements and of all matters of interest to the members of

their branch. Every member of every branch must keep in direct touch with the secretary of his branch, who will deal with all purely local matters, but who must submit all matters of importance at once to the executive head.

The union would deal with all matters relating to the carriage of fruit, its distribution and sale, and would relieve growers of the whole of the trouble of marketing and disposing of their fruit; and at the same time it would act as a purchasing agent for all goods required by growers for the successful carrying out of their business. In brief, the union undertakes the management of the commercial side of fruitgrowing, both as regards the disposal of the produce and supplpying the requirements of growers, and leaves the grower to devote the whole of his time and energy to producing good fruit and putting it up for sale in the best possible manner.

Such a union would speak with no uncertain voice, and would command attention when such matters as providing better accommodation for fruit on shipboard are being considered, as it would speak not for a small section of the growers but for the whole of the growers of the State, and it would have the weight of every one of its members at its back. This is true co-operation—a true binding together of all fruitgrowers for the production of their mutual interests; and if it can be brought about, as I trust it will be, it will do much to secure the further prosperity of the Fruit Industry of this State.

In conclusion, I trust that these remarks, which I have endeavoured to place before you in as concise a form as possible, will promote a good discussion, and that they will result in this Conference agreeing to initiate a scheme which will result in the formation of a Fruitgrowers' Union for the protection and advancement of the Fruitgrowing Industry of this State.

At this stage it was decided to limit speeches to five minutes, such time to be extended through the Chairman, if necessary.

On the motion of Mr. Mallet, seconded by Mr. Bardsley, it was unanimously decided that "the time is now opportune for organisation of the industry."

Mr. J. T. Wilson referred to the difficulty experienced by growers in obtaining a fair price for their produce commensurate with the cost of production. He considered the time was now opportune for the formation of a co-operative society having its headquarters in the capital, with branches in the larger centres and agencies in the different towns where there are markets, either in the Commonwealth or oversea. He thought that the Conference should appoint a sub-committee to draw up a prospectus, which should be submitted to the Conference at a later session. He then moved to that effect; and Mr. Howes seconded the motion.

Mr. W. H. Burton moved, as an amendment, "That measures be taken for the amalgamation of the Farmers' Co-operative Distributing Company and the Queensland Fruitgrowers' Industrial Trading Society." Mr. J. Turnbull seconded the amendment.

Mr. A. Philp moved, as a further amendment, "That a committee be formed from this Conference to meet the directors of the Queensland Fruitgrowers' Industrial Trading Society to try and broaden the scope of the society's work." Mr. Copley seconded the further amendment. Mr. Redfern supported this amendment. Messrs. Philp, Copley, and Redfern referred to the number of years the society had been in existence, and the work it had done.

Mr. Bardsley considered it was rather early for the establishment of such a committee.

Mr. Stafford supported Mr. Philp's amendment. He stated that the society had been in existence for some time, and was one of the soundest bodies in Australia. They had paid agents in Melbourne and Sydney, and an office in Brisbane. He considered if a large number of growers went into the society they would put it in the place it ought to be; then the different districts could be reached by agents. The machinery was there.

Mr. J. T. Wilson did not consider the growers in the Woombye district would be in favour of joining the trading society. One delegate had referred to the machinery being there, but he (Mr. Wilson) thought that, if machinery was obsolete, the best thing was to scrap it and get new machinery. The market, he considered, wanted putting on a sound commercial basis so as to prevent gluts, &c., and the way to do it was to start out on new lines.

Mr. Henderson considered that the system of selling the fruit by auction did not give growers much benefit.

Mr. Pitman agreed with Mr. Wilson to some extent, and stated that he had looked on the trading society as practically forwarding agents. He thought that a man should be able to consign his fruit to the head centre, and, if it was a reliable pack, the centre could stamp it and send it anywhere. Unreliable packs could be gone over and the necessary charge made on the grower for repacking.

Mr. Burton considered that the main trouble was lack of system of distribution.

Mr. J. P. Moran considered that co-operation was the best thing for all the growers present. He also referred to the necessity of obtaining the loyalty of all the growers to the society if formed.

Mr. Nicklin thought a new company should be formed and a fresh start made.

Mr. Venning was of the same opinion.

Mr. Randall urged the necessity of proper distribution.

Mr. Bardsley referred to the necessity of getting quickly to the consumer, and considered it would be wise to have one good society made up of good machinery of the existing societies.

Mr. C. Rose considered the trading society had done an immense amount of good, especially in the way of markets, and he thought the amalgamation of the existing co-operative bodies in the State, and other persons in the different districts, who were at present outside the society, would solve the problem.

The Chairman, in order to obtain finality, advised the formation of a committee, and asked the Conference whether they did not think it better to take advantage of the experience of these men and discuss the matter with them in committee?

Mr. Philp's amendment on the amendment was put, and lost.

Mr. Burton's amendment for the amalgamation of the F.C.D. Company and the Q.F.I.T. Society was then put, and lost.

The motion—"That a committee be formed from this Conference, consisting of men representing the various fruit interests, to formulate a scheme for the formation of a co-operative society, to report progress to the Conference"—was then put, and carried.

Mr. Skyring moved, and Mr. Mallet seconded, a motion that the appointing of this committee be left to the Chairman.

The motion was put, and carried; and the following were selected by Mr. Benson:—

Messrs. Laird, Maltby, Pitman, Bowser, Copley, Nicklin, Randall, J. Dennis, J. T. Wilson, and Lyons;

while Mr. Benson acted as chairman to the committee.

Scope of the Work to be Undertaken by the Organisation.

Mr. Hugonin appealed to those present to work together in the interests of the fruitgrowers generally, and not let little private interests creep in.

Mr. J. T. Wilson proposed—"That this proposed organisation take upon itself the entire control of the marketing, utilisation, and disposal of fruit in Queensland, and appoint a manager and executive to carry on the business."

Mr. G. G. Dennis seconded the motion.

Messrs. Copley, Stafford, and Philp considered it was not the time to bring forward such a motion.

Mr. Mallet deprecated the introduction of outside matters, and thought the scope of the Conference would be to advise some means for putting good fruit into the hands of the consumer as cheaply as it would pay to produce it. He also referred to the necessity for the introduction of canning in connection with the pineapple and other branches of the industry. He considered the pineapple industry depended almost entirely on canning.

Mr. Pitman considered that those appointed to the committee and the representatives of the societies should sit back and take the suggestions from the other delegates.

Mr. Voller was then called upon by the Chairman to give the Conference an outline of his experiences in the North, and he explained the difficulties the growers there had to contend with in the way of lack of shipping facilities, indifferent handling of their produce, and the difficulty of obtaining markets.

Mr. Gridley asked whether there were as many bananas grown in Queensland to-day as there were five years ago; and the Chairman

informed him that, owing to the failure of the Northern trade, the production had decreased materially.

Mr. Wood considered the Government, as well as giving instruction in the growing of the fruit, should teach the preserving of it, or find markets. He referred to banana flour as an industry that should be tried, and for which there would be a ready market. Jamaica was instanced as an example.

The Chairman thought that matter could be dealt with by the organisation, including also the manufacture of banana figs. It would mean the establishment of a big drying-house, properly equipped, and right up to date. The Department dealt with the question of banana flour some years since, but were not successful in finding a profitable market. He emphasised the necessity for utilising the surplus of the various fruits, and considered the suggestion a good one.

The Chairman also endorsed Mr. Voller's remarks regarding the state of the industry in the North.

Mr. Laird explained the difficulties of the Stanthorpe growers. They were increasing their crop of stone fruits to such an extent that, if some alteration in the present system were not arrived at, they would hardly know what to do with their fruit. He thought the distribution and carrying should go hand in hand, and referred to the necessity for advertising.

Mr. Gridley referred to the probable advantage to be derived from extending the markets in South Australia and Western Australia.

Mr. Bardsley considered that production should be controlled. He considered there must be a normal demand.

Mr. Philp considered it was not over-production, but simply a matter of distribution.

Mr. Ivens pointed out the necessity for better distribution, as many markets were available that were not yet exploited. He also recommended the more general use of fruit as an every-day article of diet, and urged the need for a cannery.

Mr. Stanton endorsed the remarks of the previous speakers, especially with regard to distribution. He pointed out the necessity of the Northern growers taking greater care in the handling and packing of their fruit, as much of it arrived in Brisbane in a condition necessitating its picking over, thus entailing heavy losses to the shippers. He did not like the country-order trade, which he considered dangerous from the merchant's point of view.

Mr. Laird wanted to know what would happen if the Fruitgrowers' Co-operative Society got control of their own production?

The Chairman informed him that distributors would be necessary, for, although a great number of things could be done without, there must be someone to put it before the consumer. They still have to utilise distributors in California, so we would be under the same necessity here.

Mr. C. R. Wilson endorsed the necessity of better methods of distribution instead of rushing all the fruits to one market. He referred to his experience in receiving, producing, and marketing fruit in New Zealand.

He wanted to do what he could to bring about the organisation of the industry here.

The same speaker pointed out the success achieved by the New Zealand Farmers' Co-operation, which started at Canterbury. The first year the turnover was £14,000, and last year it was £2,500,000, principally lambs; it was worked simply on a commission basis, and at the end of the year bonuses were distributed to suppliers. He considered a man of great ability was required as head of the concern. The New Zealand Farmers' Co-operation, Christchurch, went ahead by leaps and bounds; they paid their manager £2,000 or £3,900 a year. If there were brains and a proper system of distribution, he considered there would be no complaints, not even from the cabbage farmer (who was complaining at present of the glut). He advocated the amalgamation of the existing societies.

Mr. Dunlop emphasised the necessity of the association having sufficient capital to start with, and pointed out the necessity for a binding agreement to compel the producers to be loyal, as lack of loyalty seemed fairly common among farmers' co-operative societies, &c. He did not consider they would make much of a success at what they had in view with less than £100,000 subscribed stock.

The Chairman pointed out that there seemed to be a consensus of opinion regarding the need for improvement in the methods of distribution, but no ideas seemed to have been forthcoming with regard to purchasing. He had heard lately of the enormous differences in the charges for fruit cases, and thought the purchase of nails, manures, spraying plants and materials, and the hundred-and-one odd things needed in the business would help them considerably. He considered purchasing on the right lines was half the business battle.

Mr. Dunlop pointed out that these were the lines some of the largest co-operative concerns in Great Britain had started on. They gathered enough on the purchasing lines to capitalise them on the selling lines. He referred to the country trade as a dangerous one, and considered that one might fall in for more than he would get out of it.

Mr. Howe also referred to the need for better distribution.

Mr. Graham endorsed the necessity for appointing a thoroughly competent business man, and paying him sufficient salary to make him work "up to his top notch."

(Some discussion ensued as to the lowest commission at which the business could be successfully carried out.)

Mr. Ivens wanted to know how the company was going to be financed between the time the fruit was sent down by the farmer and the time it was sent out and sold? He considered many growers could not wait two or three months for their money, and advocated prompt payments for the small men, as otherwise these men would be likely to go to those who would make them prompt advances.

Mr. Moore pointed out the advantage that had accrued in their district with regard to co-operation in case-making, whereby a considerable saving was effected. He considered the trading society had benefited

the farmers, but did not consider the farmers, as a body, were loyal to their comrades—they would not pull together.

The Chairman suggested that the delegates might give the sub-committee an idea as to the capital they considered necessary.

Mr. Mallet proposed—"That the capital of the association be not less than £50,000, and the minimum number of shares be five."

The motion was seconded by Mr. Burton as a recommendation to the committee, and was put and carried.

On resuming the business of the Conference after the dinner adjournment, Mr. Benson gave a résumé of the business transacted by the sub-committee; and the Secretary read the recommendations which they submitted for the approval of the Conference.

Mr. Walker inquired whether the Federal tax would not be much higher if the nominal capital were fixed at £100,000 instead of £50,000? He thought the repatriation tax would amount to £1,500.

The Chairman explained the incidence of the repatriation tax and the fact that any goods, stock, seeds, &c., donated to the Fund would entitle the donor to have their value deducted as part payment of his tax.

Mr. C. Wilson considered that the meeting should look ahead before deciding on too small a capital. In ten years' time even £200,000 might not be enough. He considered that many companies, when formed, overlooked the fact of possible expansion, and had to pay for it later.

The Chairman pointed out that this was very expensive.

Mr. C. Wilson drew attention to the fact that one of the large merchants in Brisbane told him the supply of canned pineapples was only sufficient for seven months of the year, and then, when they got fresh supplies, they had to advertise the fact. An auctioneer had also drawn his attention to a London house who would take almost any quantity of pines, but the pines put up must be absolutely the best article brains could produce.

Recommendations from the Sub-committee.

The recommendations from the sub-committee were submitted *seriatim*.

On the motion of Mr. Gridley, seconded by Mr. Mallet, it was decided that the name of the organisation be "The Queensland Co-operative Fruitgrowers' Limited."

On the motion of Mr. Ivens, seconded by Mr. Gridley, it was decided that the capital be £100,000 in £1 shares.

On the motion of Mr. Holton, seconded by Mr. Randall, it was decided that the minimum number of shares to be held by one individual be five.

On the motion of Mr. Holton, seconded by Mr. Mallet, it was decided to make an addition to the recommendation—viz., that no dividend on shares shall exceed 5 per cent. per annum on paid-up capital.

On the motion of Mr. Gowen, seconded by Mr. Graham, it was decided that the objects be—To receive, distribute, and utilise fruits and

vegetables; to buy and sell any commodities required by the corporation for the carrying out of their business; and to undertake any business that may be of benefit to the said corporation.

Constitution.

It was decided that "the management of the corporation be vested in the hands of a directorate of nine (9) members, to be elected by the shareholders from their number. That a general manager possessing keen business ability be appointed; and that the staff be appointed by the board of directors and the general manager." This motion was proposed by Mr. Gowen, and seconded by Mr. Graham.

Retirement of Directors.

On the motion of Mr. Mallet, seconded by Mr. Randall, it was decided that the directors retire in rotation, three a year, so that there be a majority of the directors who are conversant with the business, the retiring directors to be eligible for re-election.

Provisional Directors.

It was decided to appoint a board of provisional directors to meet and draft a prospectus and articles of association.

On the motion of Mr. Mallet, seconded by Mr. Graham, it was decided that the head office be in Brisbane.

Nominations were then taken for the provisional directors, and the following were elected:—Messrs. James Lindsay, G. F. Nicklin, A. Bowser, G. Pitman, C. R. Wilson, H. Randall, W. W. Mallet, G. H. Graham, W. H. C. Laird, and G. G. Dennis.

19TH OCTOBER, 1916.

Control of Fruit and Vegetable Pests.

The Chairman, in his opening remarks, pointed out the necessity for combined action on the part of all growers in the destruction of fruit and vegetable pests, and referred to the disadvantages that the commercial grower of fruit had to contend with owing to the large number of non-commercial growers who only grow fruit trees for home consumption, and take no systematic action regarding the destruction of pests. He further pointed out that hitherto "*The Diseases in Plants Act of* 1896" had only been enforced with respect to the question of imported fruits, plants, and vegetables, as well as locally-grown articles forwarded to the metropolitan markets, but that very little orchard inspection had taken place. Referring to the recent outbreak of beetle borers in a part of the State, he pointed out that such an outbreak could not have occurred to the extent it has, had a system of orchard inspection been in vogue.

A long and general discussion on this pest took place, in which many of the delegates took part. Mr. H. C. Moore, of Redland Bay, who has had considerable experience with this pest, gave his experiences, showing

that the mature insects were easily attracted to heaps of old stumps, where they could be gathered up and destroyed. He strongly recommended the use of such traps, and considered that the destruction of all rubbish other than the traps would tend materially to decrease the numbers of this pest. He found that the borers preferred the old stumps to the young growing plants.

Specimens of affected banana plants and of the insect in all stages of its development were submitted for the information of the delegates.

The Chairman referred to the fruit fly and to the fact that a remedy would shortly be placed on the market in Queensland which could be supplied to the growers at a reasonable cost, and would attract every male fruit fly within reach.

The Chairman asked for suggestions with regard to the treatment of diseases; and in the case of the borers suggestions were made that the affected stools should be blown up with dynamite. Gelignite was also mentioned; and Mr. Benson promised to try the use of explosives as suggested.

Mr. Skyring suggested that specimens of the beetle be sent to the school teachers in the banana-growing districts, so that the children might be told about them, as they would be much quicker at discovering the beetles than older people.

The Chairman agreed to ask the Minister to instruct the Entomologist to prepare specimens, to be supplied to schools and associations in banana-growing districts.

The consensus of opinion of the delegates was to the effect that every means should be taken to prevent the spread of the borer into clean areas, and to keep it in check where already established.

On the motion of Mr. Corrie, seconded by Mr. Gowen, it was decided—"That it is necessary to take combined action for the destruction of the fruit pests."

In connection with the best means of destroying fruit pests, Mr. Graham proposed and Mr. Wood seconded a motion—"That this meeting of fruitgrowers urge the Minister for Agriculture to place a sum of money on the Estimates to provide for the appointment of officers competent to undertake scientific investigation of plant diseases." The motion was carried unanimously.

Enforcement of Diseases in Plants Act.

On the motion of Mr. Mallet, seconded by Mr. Whitaker, it was resolved—"That the Diseases in Plants Act, as amended, be put into force."

The Chairman then read a letter from the Mount Cotton Association protesting against the enforcement of the Act any more than for the past ten years, and asking that the Act be enforced in the forest, if enforced on the farms, as the same pests exist there.

Mr. Hugonin referred to the scarcity of labour, and asked for sympathetic administration of the Act; and the Chairman pointed out

clearly that it was not his intention to administer the Act with severity, but it would be administered with common sense.

Mr. Maltby made a request for a cyaniding plant to be sent to Bowen, with a man in charge.

The Chairman gave a dissertation *re* the combating of Irish Blight, and recommended care in the selection of seed, treatment of seed prior to planting, and systematic spraying of the plants. He pointed out that the control of this pest was in the hands of the growers.

Mr. Dunlop endorsed the Chairman's remarks.

On the motion of Mr. Corrie, seconded by Mr. Graham, it was decided—"That this Conference of Queensland Fruitgrowers urge upon the Minister for Agriculture and the Government the necessity for the establishment, in the best interests of the primary producers, of a Faculty of Agriculture at the University of Queensland." Carried without discussion.

On the motion of Mr. Reaney, seconded by Mr. J. Wilson, it was decided—"That a delegation selected from the provisional directors be sent immediately to wait on the shipping companies to bring before them the necessity for providing better accommodation for fruit and vegetables on shipboard, and to improve the present methods of handling."

Rapid Train Service.

The Chairman reported that the Railway Department had this matter in hand.

It was proposed by Mr. Holton, seconded by Mr. Redfern—"That this Conference desires to place upon record its appreciation of the action of the Railway Department in its endeavours to bring about an acceleration in the carriage of perishable products by rail from Queensland to the Southern States, and that it be an instruction to the Chairman to forward this to the Commissioner for Railways."

This motion was put, and carried.

A motion was proposed by Mr. Dunlop, seconded by Mr. Ivens—"That this Conference appoint a delegation from the provisional directors to the Commissioner for Railways asking that the Beaudesert-Kyogle Railway connection to New South Wales be proceeded with as early as possible." After discussion, the motion was put, and lost.

A question being raised *re* Citrus Canker, the Chairman pointed out that every precaution was being taken by the Federal Government to prevent the introduction of this dread pest. Unfortunately, it had made its appearance in the Northern Territory. So far as is known, it has not made its appearance in this State.

With regard to fertilisers, Mr. Elphinstone explained the preparation of ground lime; and, in reply to a question, the Chairman stated that it came under the amended Act, which required that the state of fineness of the ground limestone must be stated at time of sale.

The Opening up of New Markets.

In connection with the opening of new markets, a general discussion ensued; and the Chairman pointed out that he believed it would eventually be found that pineapples carried at the right temperature and under proper conditions could be successfully sent to the home markets, and instanced what was being done in the carriage of fruit from the West Indies and other places.

Mr. Hugonin suggested that a practical test should be made; but the Chairman informed him that the matter would have to stand over till the termination of the war, as it could not be arranged at present.

Mr. C. R. Wilson suggested America as a possibly better market than London; and the Chairman pointed out that this market had been tested some years ago and satisfactory returns obtained, but for some reason the trade had not developed.

Mr. Voller referred to the necessity for advertising our fruits in distant markets.

Mr. Wood pointed out that our tropical fruits were not known commercially on many of the Southern markets.

On the suggestion of Mr. Laird, supported by Mr. Lyons, the Chairman promised to ask the authority of the Minister for carrying out, on their behalf, cold storage experiments with fruits from the Stanthorpe district—grapes, peaches, &c.

The question of marketing peaches in trays from Stanthorpe was discussed; and Mr. Ross, Instructor in Fruit Culture, instanced what had been done in this direction at Westbrook some years ago, and the success that had been attained thereby.

Mr. Bowser moved (on behalf of the Montville Association), and Mr. Ivins seconded, a motion to the effect "That the Hon. the Minister be asked to favourably consider the establishment of demonstration orchards and the carrying out of practical orchard experiments." This motion was carried unanimously.

Mr. Laird proposed—"That this Conference of Fruitgrowers recommend to the Minister for Railways that receptacles be provided in each of the carriages of the Southern Mail Train for the depositing by passengers of waste fruits, and that notices drawing attention to the presence and use of these receptacles be provided." The motion was seconded by Mr. Lyons, and, when put, was carried.

Mr. T. I. Reaney mentioned that he had received word of an Interstate Conference of Fruitgrowers which was to open at Melbourne on the 31st October, 1916.

The question of a delegate was mentioned; and it was decided that Mr. A. Philp, of Grantham, who was already going down to represent the Queensland Fruitgrowers' Industrial Trading Society, should be asked to represent the Conference of Queensland Growers.

Mr. D. Jones drew attention to the report in the papers concerning the possible lowering of the duty on dried fruits, as mentioned by the Chief Commissioner; and, on the motion of Mr. Gowen, seconded by Mr. Maltby, the following resolution was carried:—"That the attention of the Hon. the Minister for Agriculture be drawn to an article that appeared in the 'Daily Mail' of 19th October, to the effect that it is proposed to lower the duty on imported dried fruits. This Conference feels that such action would be detrimental to the best interests of the fruitgrowers of this State, and trusts that the Hon. the Minister will place our views before the Federal Authorities."

On the motion of Mr. Laird, seconded by Mr. Bardsley, it was decided to convey a similar resolution to the Interstate Conference.

The Conference closed with a hearty vote of thanks to Mr. Benson and the officers of the Agricultural Department.

NEW FRUIT-PRESERVING PROCESS.

The tests of a new process of preservation of fruit, in conjunction with refrigeration, known as the Kapadia system, have been concluded with (it is stated) very favourable results. The Commonwealth Government Office in London had placed in Dr. Kapadia's chamber some cases of Australian apples, very mixed specimens, some of them bearing bruises. After six and a-half weeks' storage under the Kapadia system (following, of course, the six weeks or so of refrigeration since packing in Australia), the fruit, on being taken out of the chamber, was found to be in precisely the same condition as it was when put in, the bruises on the apples revealing no vestige of extension. A box of West Australian apples affected by latent "bitter pit" under the skin of the apple had had this affection checked. The Kapadia process consists in substituting for the ordinary air of a cold storage chamber an inert gas, the simple product of combustion in a surface combustion boiler. Another apple disease, "black spot," was also found to have been arrested, and the apples actually bore the original orchard bloom, and appeared in perfectly first-class condition. Carriage under the Kapadia system is said to need only a temperature of about 50 degrees Fahr., instead of the freezing or chilling temperature of ordinary cold storage, so that the experiments are stated to point to favourable development and exploitation of the process. The trials are to be followed by tests with soft fruit.—"Farmers' Gazette."

Botany.

ILLUSTRATED NOTES ON THE WEEDS OF QUEENSLAND.

By J. F. BAILEY, Government Botanist, and C. T. WHITE, Assistant Government Botanist.

No. 6.

CAPE SPINACH.

EMEX AUSTRALIS, Steinh.

During the past month numerous specimens have been received of *Emex australis*, the Cape Spinach, for determination and report, and the plant seems to be spreading to some considerable degree. It is a native of South Africa and is recorded by Bentham in the "Flora Australiensis" with some doubt as indigenous to South and Western Australia, but has now spread into all the eastern States. F. Turner, writing in the "Sydney Morning Herald" of 7th December, 1912, says: "In 1830 the ship 'Margaret' left Bristol, England, with passengers for the Swan River Settlement, West Australia, and during the voyage called at Capetown, South Africa, where one of the intending settlers procured some seeds of the so-called Cape Spinach, a plant known to botanists as *Emex australis*, with the view of cultivating it in the land of his adoption. In due course the seeds were sown in a garden in Western Australia, and the resulting plants grew vigorously; but, instead of being a useful and palatable vegetable, it has proved to be one of the most obnoxious and aggressive weed pests ever acclimatised in Australia."

It was first recorded for Queensland as naturalised about St. George in 1911 ("Queensland Agricultural Journal," Vol. 27, p. 305).

It is a glabrous annual of spreading habit, with rather fleshy prostrate or ascending stems; the leaves are long-stalked, broadly ovate, truncate at the base and wavy on the edges. The flowers are unisexual, the males in a short raceme rising from the cluster of subsessile female ones. The fruiting perianth is enlarged and hard, with a triangular tube and three outer rigid spreading spines near the top and three inner shorter ones closing over the fruit. The worst feature about the plant is its spiny seed-vessel, for as it lies on the ground one of the three sharp spines is always erect, or nearly so, and therefore likely to cause painful wounds; and, further, as the plant is spreading in sheep areas, wherever seen, its eradication should be proceeded with immediately.

It has numerous vernacular names, among them being Spiny Emex, Goat-head Burr, Three-cornered Jack, Cats' Heads, Cape Dubbeltje-Doorn or Cape Devil's Thorn, &c.

Mr. Andrew Smith, in his work on the medicinal plants of the Cape Colony, says: "The leaves are boiled and used as a cabbage in biliousness and also for creating an appetite; they are mildly purgative and diuretic."

Eradication, as in the case of all annuals, should be proceeded with prior to the seeding stage.

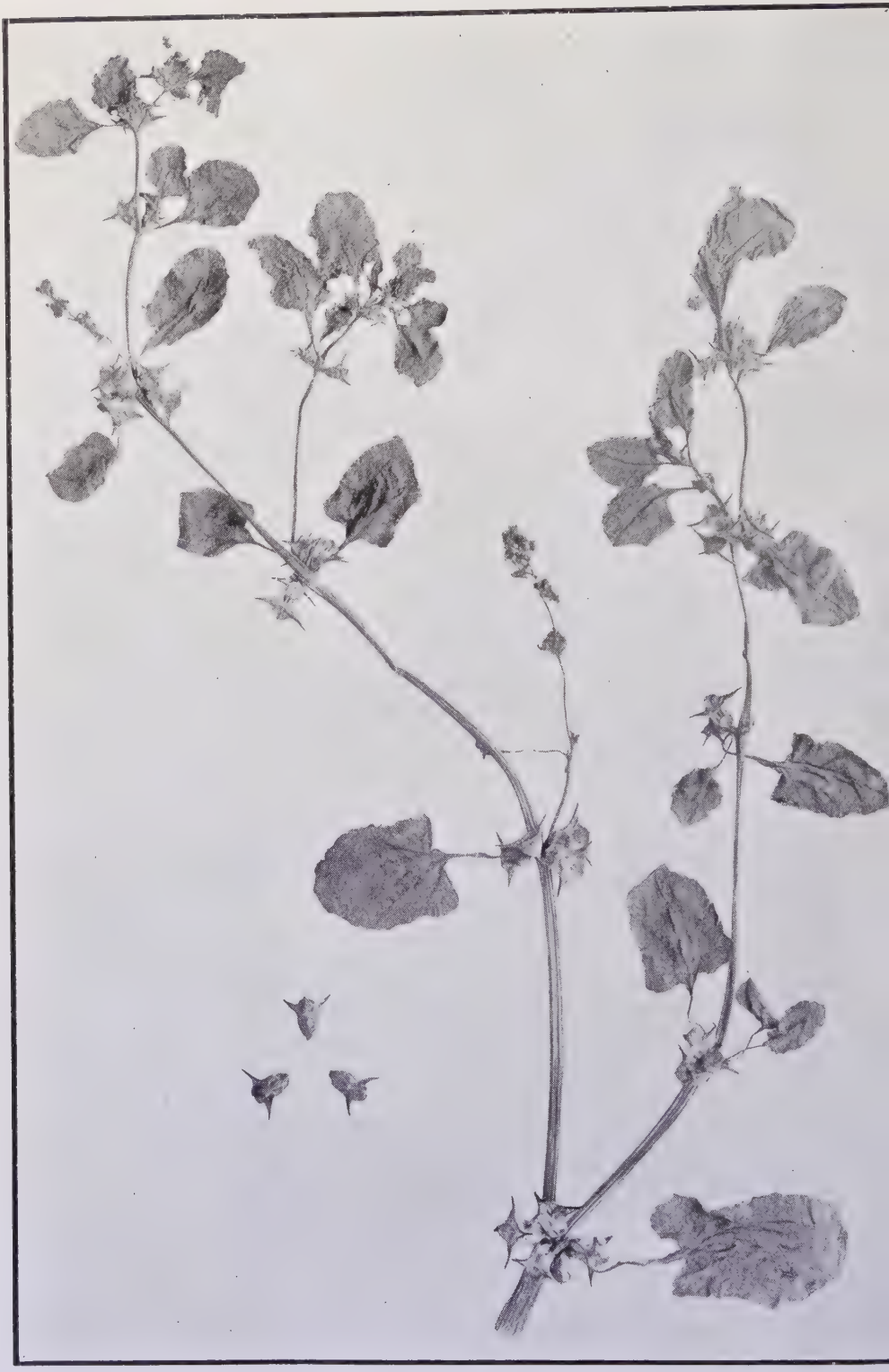


PLATE 41.—CAPE SPINACH. EMEX AUSTRALIS, Steinh.

Dairying.

THE DAIRY HERD, QUEENSLAND AGRICULTURAL COLLEGE, GATTON.

MILKING RETURNS OF COWS FOR MONTH OF OCTOBER, 1916.

Name of Cow.	Breed.	Date of Calving.	Total Milk.	Test.	Commercial Butter.	Remarks.
			Lb.	%	Lb.	
Bluebelle ...	Jersey	25 June, 1916	809	4·9	46·76	
Lilia ...	Ayrshire	4 Sept. ,,	998	3·9	45·67	
Lady Dorset	,, ...	14 ,, ,,	930	4·1	44·80	
Nina ...	Shorthorn... ...	24 June ,,	1,004	3·8	44·74	
Sweet Meadows	Jersey	16 Aug. ,,	630	5·6	41·73	
Thornton's Fairetta	,, ...	26 May ,,	637	5·2	39·12	
Miss Bell ...	,, ...	1 Aug. ,,	595	5·5	38·69	
Queen Kate	Ayrshire	15 June ,,	916	3·5	37·51	
Rosine ...	,, ...	5 July ,,	778	3·9	35·60	
Mistress Bee	Jersey	21 Jan. ,,	493	5·8	33·84	
Auntie's Lass	Ayrshire	4 April ,,	710	4·0	33·34	
Dutch Maid	Holstein	22 Aug. ,,	824	3·4	32·75	
Lady Melba	,, ...	28 Oct., 1915	712	3·9	32·58	
Skylark ...	Ayrshire	21 Mar., 1916	693	3·9	31·70	
Princess Kate	,, ...	21 June ,,	683	3·9	31·24	
Lady Loch II.	,, ...	17 Mar. ,,	648	4·1	31·21	
Cocoatina ...	Jersey	17 Mar. ,,	544	4·8	30·79	
Iron Plate ...	,, ...	20 Jan. ,,	481	5·4	30·70	
Belinda ...	Ayrshire	27 Feb. ,,	629	3·9	28·78	
Netherton Belle	,, ...	23 April ,,	504	4·8	28·53	
Charity ...	Jersey	28 May ,,	474	5·0	27·96	
La Hurette Hope	,, ...	6 Oct. ,,	467	4·5	24·75	
Leonie ...	Ayrshire	16 Aug. ,,	529	3·6	22·81	
Windyhill Davidina	,, ...	16 July ,,	524	3·6	22·10	
LadyMitchell	Holstein	3 June ,,	469	4·0	22·08	
Lady Margaret	Ayrshire	14 Oct., 1915	393	4·6	21·29	

The above cows, in addition to natural pasture, were fed on sorghum and Soudan grass ensilage mixed with wheaten chaff.

THE DAIRY HERD, QUEENSLAND AGRICULTURAL COLLEGE, GATTON.

MILKING RETURNS OF COWS FROM 1ST TO 26TH NOVEMBER, 1916.

Name of Cow.	Breed.	Date of Calving.	Total Milk.	Test.	Commercial Butter.	Remarks.
			Lb.	%	Lb.	
Bluebelle ...	Jersey	25 June, 1916	667	4·9	38·54	
Jeannie ...	Ayrshire	27 Oct. ,,	725	4·1	34·92	
Lady Dorset	,, ...	14 Sept. ,,	762	3·9	34·87	
Nina ...	Shorthorn... ...	24 June ,,	776	3·8	34·56	
Thornton Fairetta	Jersey	26 May ,,	542	5·2	33·29	
Lilia ...	Ayrshire	4 Sept. ,,	727	3·8	32·39	
Sweet Meadows	Jersey	16 Aug. ,,	495	5·2	30·39	
Queen Kate	Ayrshire	15 June ,,	740	3·5	30·30	
La Hurette Hope	Jersey	6 Oct. ,,	505	5·0	29·80	
Lady Melba	Holstein	28 Oct., 1915	650	3·9	29·74	
Miss Bell ...	Jersey	1 Aug., 1916	487	5 0	28·73	
Twylish's Maid	,, ...	3 Nov. ,,	467	5·0	27·55	
Cocoatina ...	,, ...	17 March ,,	454	5·0	26·79	
Auntie's Lass	Ayrshire	4 April ,,	567	4·0	26·62	
Rosine ...	,, ...	5 July ,,	610	3·6	25·72	
Hedges Dutchmaid	Holstein	22 Aug. ,,	656	3·3	25·27	
Mistress Bee	Jersey	21 Jan. ,,	365	5·5	23·73	
Charity ...	,, ...	28 May ,,	379	5·3	23·73	
Skylark ...	Ayrshire	21 March ,,	546	3·7	23·66	
Princess Kate	,, ...	21 June ,,	550	3·6	23·20	
Lady Loch II.	,, ...	17 March ,,	500	3·9	22 89	
Belinda ...	,, ...	27 Feb. ,,	452	3·9	20·68	

The above cows, in addition to natural pasture, were fed on a ration of ensilage and mixed lucerne and wheaten chaff.

Poultry.

REPORT ON EGG-LAYING COMPETITION, QUEENSLAND AGRICULTURAL COLLEGE, NOVEMBER, 1916.

Eight thousand nine hundred and seventy-seven eggs were laid from 1st November to 27th November inclusive, an average of 123 per pen. There has been a falling off in the laying, owing largely to broodies, there having been as many as four of these out of one pen at the same time, and several pens have had three. The Dixie Egg Plant holds pride of place for the highest individual score, 196, closely followed by Miss Hinze with 195. It is unfortunate that one of the Dixie Plant birds has not laid an egg during the eight months, and there is every reason to believe that she is barren. Mr. Forrest had the misfortune to lose a hen (C) in September, and the replacing bird has not laid an egg : this hen also is possibly barren. Mr. Wilson wins the monthly prize with 144 eggs for the twenty-seven days. The following are the individual records :—

Competitors.	Breed.	Nov.	Total.
*J. Zahl	White Leghorns	133	1,035
*T. Fanning	Do.	122	1,031
*Miss M. Hinze	Do.	140	1,012
*A. T. Coomber	Do.	132	996
*J. M. Manson	Do.	141	994
G. H. Turner	Do.	137	982
A. Howe, N.S.W.	Do.	111	975
W. Meneely	Do.	137	960
J. R. Wilson	Do.	144	958
*Mrs. Jobling, N.S.W.	Black Orpingtons	107	955
Geo. Tomlinson	White Leghorns	133	941
Dr. E. C. Jennings	Do.	123	940
J. M. Manson	Black Orpingtons	128	917
*A. E. Walters	White Leghorns	128	915
*E. A. Smith	Do.	132	914
*E. F. Dennis	Do.	135	914
*Dixie Egg Plant	Do.	117	908
Mrs. Munro	Do.	130	896
Mrs. W. D. Bradburne, N.S.W.	Do.	137	894
T. B. Hawkins	Do.	112	890
Geo. Prince	Do.	129	887
T. Taylor	Do.	139	886
W. Lyell	Do.	122	886
A. W. Bailey	Do.	126	878
*J. F. Dalrymple, N.S.W.	Rhode Island Reds	111	877
Kelvin Poultry Farm	White Leghorns	124	869
H. W. Broad	Do.	128	869
T. E. Jarman, N.S.W.	Do.	125	866
*J. H. Gill, Victoria	Do.	132	856
*W. H. Knowles, junr.	Do.	137	854
*E. West	Do.	123	846
*C. Knoblauch	Do.	121	845
R. Burns	S.L. Wyandottes	118	845
Cowan Bros., N.S.W.	Black Orpingtons	116	843
P. Brodie	White Leghorns	135	843
H. Jobling, N.S.W.	Black Orpingtons	117	841
W. Purvis, S.A.	White Leghorns	132	836
F. Clayton, N.S.W.	Do.	127	834
A. F. Camkin, N.S.W.	Do.	119	833
*Kelvin Poultry Farm	Do.	121	832

EGG-LAYING COMPETITION—*continued.*

Competitors.	Breed.	Nov.	Total.
Mars Poultry Farm	White Leghorns ...	129	830
Mrs. C. Davis	Do.	127	829
E. Pocock	Do.	136	828
A. H. Padman, S.A.	Do.	127	824
S. B. Tutin	Do.	89	823
*W. L. Forrest, N.S.W.	Do.	109	823
E. F. Dennis	Black Orpingtons ...	126	818
King and Watson, N.S.W.	White Leghorns ...	126	816
J. Anderson, Victoria	Do.	131	812
Cowan Bros., N.S.W.	Do.	142	811
T. Fanning	Black Orpingtons ...	130	803
C. P. Buchanan	White Leghorns ...	98	801
W. Becker	Do.	125	790
W. Hirst, N.S.W.	Do.	116	785
J. G. Richter	Do.	127	772
*J. H. Madrers, N.S.W.	Rhode Island Reds ...	106	769
F. Clayton, N.S.W.	Do.	120	766
R. Burns	Black Orpingtons ...	108	764
Mars Poultry Farm	Do.	131	758
C. W. Holland	White Leghorns ...	136	757
*J. W. Macrae	Black Orpingtons ...	95	755
J. Gosley	White Leghorns ...	97	746
*J. Anderson, Victoria	Red Sussex	88	743
W. H. Forsyth, N.S.W.	Black Orpingtons ...	103	704
J. F. Coates	White Leghorns ...	121	696
F. W. Leney	Do.	130	695
Moritz Bros., S.A.	Do.	142	687
H. Hammill, N.S.W.	Do.	129	680
L. K. Pettitt, N.S.W.	Do.	107	674
W. Lindus, N.S.W.	Do.	128	668
A. T. Coomber	Sicilian Buttercups ...	112	634
F. W. Leney	Rhode Island Reds ...	110	606
E. F. Dennis	White Wyandottes ...	95	561
Totals	...	8,977	60,981

* Indicates that the pen is taking part in single hen competition.

SINGLE HEN TEST RESULTS.

Competitors.	A.	B.	C.	D.	E.	F.	Total.
J. Zahl	161	173	185	167	174	175	1,035
T. Fanning	180	182	183	176	161	149	1,031
Miss M. Hinze	172	155	195	156	173	161	1,012
A. T. Coomber	171	180	175	144	152	174	996
J. M. Manson	153	190	155	157	183	156	994
Mrs. J. Jobling	178	192	136	159	133	157	955
A. E. Walters	159	181	147	133	167	128	915
E. A. Smith	180	160	148	171	125	130	914
E. F. Dennis	139	178	129	173	159	136	914
Dixie Egg Plant	196	181	187	174	...	170	908
J. F. Dalrymple	136	137	169	116	167	152	877
J. H. Gill	117	146	135	173	148	137	856
W. H. Knowles, junr....	140	135	147	123	159	150	854
E. West	176	158	124	128	120	140	846
C. Knoblauch	132	150	134	128	150	151	845
Kelvin Poultry Farm	130	132	144	116	175	135	832
W. L. Forrest	154	156	52	165	159	137	823
J. H. Madrers	100	149	153	141	120	106	768
J. W. Macrae	96	162	144	129	106	118	755
J. Anderson	143	115	155	68	154	108	743

General Notes.

GINSENG.

By an oversight the illustrations of the Ginseng root and plant were omitted from our article on this plant in the November issue of the Journal. They are interesting as showing the singular forms taken by the roots.

SOCIETIES, ETC.

Binjour Plateau—Binjour Dairymen and Farmer's Society; H. F. Lindenmayer, secretary.

Brisbane -

The Jersey Cattle Society of Queensland; R. S. Maynard, secretary.

The Holstein Cattle Club of Australia; R. S. Maynard, secretary.

The Ayrshire Cattle Society of Queensland; R. S. Maynard, secretary.

The Illawarra Dairy Cattle Association of Queensland; R. S. Maynard, secretary.

The Milking Shorthorn Stud Society of Queensland; R. S. Maynard, secretary.

The Shorthorn Stud Book Society of Queensland; R. S. Maynard, secretary.

The Queensland Dairy Stud Book Society (Alfred Gorrie, secretary) is deleted from the quarterly list of Societies and Associations, formerly published monthly in the "Queensland Agricutural Journal."

Wamuran.—Wamuran District Fruitgrowers' and Progress Association; Ray. E. Whiting, secretary.

Yandina Creek Farmers and Settlers' Progress Association; Secy., J. J. Simpson.

Yandina Creek Farmers and Settlers' Progress Association; J. J. Simpson, secretary.

BUDERIM MOUNTAIN BRANCH OF THE QUEENSLAND FARMERS' UNION.

Mr. Arthur Blakey has been appointed secretary to the Buderim Mountain Branch, *vice* Captain G. Burrows, resigned.

POTATO BLIGHT.

The Department of Agriculture and Stock has of late received many inquiries from farmers as to the best method of dealing with the Irish Blight in potatoes, and recommends the systematic spraying of all potatoes with either the Bordeaux or the Burgundy mixtures.

The former is made by dissolving 6 lb. of bluestone in 20 gallons of water in one tub, and slacking 4 lb. of quicklime in another tub, and adding sufficient water to make 20 gallons of milk of lime. The two are then mixed together in a third wooden tub, the result being 40 gallons of Bordeaux mixture.

Burgundy mixture is made by dissolving 8 lb. bluestone in 35 gallons water in a wooden tub, and 10 lb. of washing soda in 5 gallons water in a second vessel. The washing soda solution is then poured slowly into the bluestone solution and stirred, the result being 40 gallons of Burgundy mixture.

SCARCITY OF POTASH.

Mr. J. C. Brünnich, Agricultural Chemist, in answer to many inquiries as to the potash content of certain trees, small plants, and shrubs, supplies the following analytical figures showing the weights of lime, potash, and phosphoric acid contained in the ashes of such trees and plants, in pounds and fractions of a pound:—

Ash.	Lime.	Potash.	Phosphoric Acid.
Bloodwood	8·47	5·25	·27
Ironbark	(?)	1·53	·82
Blackbutt	7·27	2·02	·04
Red gum	(?)	4·17	·38
Spotted gum	(?)	·70	·10
Boxwood	(?)	1·85	·87
Belar	49.10	4.95	.02
Gidyea	48·70	1·10	·90
Brigalow	54·40	·89	(?)
Apple-tree	29·85	4·45	·34
Pineapple plants	7·20	15·02	5·88
Bottle-tree	23·48	29·02	·24
Banana plants	21·32	38·84	1·46
Sisal hemp	31·86	8·00	4·60
Cane tops	4·78	6·49	4·90
Cane trash	4·00	4·90	3·20
Lantana	16·95	13·96	3·57

DEALING WITH THE ANT PEST.

The Beerwah correspondent of the "Farmers' Gazette" writes—

"Here is an absolute and simple preventive against the incursion of ants into safes and cupboards which is guaranteed to give immunity from ant plague, and has never been known to fail:—Take a strip of ordinary tape, say, an inch wide, and, after smearing with castor oil, tie neatly around the legs of safes, tables, &c., where ants are troublesome, and no ant will ever be seen to cross the tape, which must be placed 2 or 3 in. from the floor, and the oil renewed occasionally, say every month or even at longer intervals of two or three months, care being taken to prevent the tape becoming coated with dust. Ordinary prepared or crude castor oil is all that is needed. No other kind of oil must be applied to the tapes."

Answers to Correspondents.

H. J. PAGE, Lake Cootharaba—

Mr. C. Ross, Instructor in Fruit Culture, supplies the following answers to your questions:—

1. Three or four male papaw trees would be quite sufficient for fifty female trees. As the papaw is not strictly dicœcious, male trees are not absolutely necessary.
2. By Finger Cherries, if you mean the fruit of the Eugenia, I have never heard of it being injurious to the eyesight when eaten.
3. The Brazilian or Surinam Cherry has no similarity to a finger. It is not an elongated fruit, but more in the shape of a rosette. We eat them in our house, cooked and uncooked, in large quantities, and never suffered any ill effects from them.
4. With reference to the diseased fruit you mention, send one to the Departmental Pathologist (Mr. H. Tryon) for diagnosis.

Statistics.

RAINFALL IN THE AGRICULTURAL DISTRICTS.

TABLE SHOWING THE AVERAGE RAINFALL FOR THE MONTH OF OCTOBER IN THE AGRICULTURAL DISTRICTS, TOGETHER WITH TOTAL RAINFALLS DURING OCTOBER, 1916 AND 1915, FOR COMPARISON.

Divisions and Stations.	Average Rainfall.		Total Rainfall.		Divisions and Stations.	Average Rainfall.		Total Rainfall.	
	Oct.	No. of Years' Records.	Oct., 1916.	Oct., 1915.		Oct.	No. of Years' Records.	Oct., 1916.	Oct., 1915.
North Coast.	In.		In.	In.	*South Coast*—continued:	In.		In.	In.
Atherton	0·76	15	0·47	0·25					
Cairns	1·78	34	7·13	0·17	Nambour	3·11	20	7·82	0·59
Cardwell	1·87	44	2·18	0·78	Nanango	2·33	34	5·87	0·83
Cooktown	1·13	40	2·94	1·35	Rockhampton ...	1·80	29	4·09	1·72
Herberton	0·94	29	0·84	0·19	Woodford	2·69	29	5·34	0·21
Ingham	1·56	24	1·15	3·35					
Innisfail	2·74	35	14·14	2·01					
Mossman	5·05	4	10·29	1·51	*Darling Downs.*				
Townsville	1·23	45	2·57	0·15					
					Dalby	2·14	46	3·57	0·38
					Emu Vale	2·45	20	2·45	0·03
Central Coast.					Jimbour	1·89	28	3·54	0·91
					Miles	2·03	31	2·19	0·42
Ayr	0·94	29	1·16	3·46	Stanthorpe ...	2·66	43	3·36	0·33
Bowen	1·09	45	1·21	2·02	Toowoomba ...	2·68	44	4·11	0·26
Charters Towers ...	0·70	34	0·42	0·03	Warwick	2·35	29	2·15	0·02
Mackay	1·99	45	4·04	0 99					
Proserpine	1·65	13	5·94	1·95					
St. Lawrence ...	1·79	45	6·15	2·08	*Maranoa.*				
					Roma	1·76	42	2·04	0·16
South Coast.									
					State Farms, &c.				
Biggenden	2·20	17	6·12	2·40					
Bundaberg	2·08	33	5·81	0·80					
Brisbane	2·72	65	3·30	0·25	Bungeworgorai ...	1·07	4	1·90	0·16
Childers	2·08	21	6·10	0·27	Gatton College ...	2·46	17	2·93	0·05
Crohamhurst ...	3·74	22	6·04	0·21	Gindie	1·36	17	2·39	0·83
Esk	2·42	29	3·0o	0·50	Hermitage ...	2·06	10	1·92	0·20
Gayndah	2·38	45	6·71	0·11	Kairi	1·38	4	1·32	Nil
Gympie	2·76	46	5·59	0·16	Kamerunga ...	1·59	27	4·99	0·25
Glasshouse M'tains	3·00	8	5·67	0·20	Sugar Experiment				...
Kilkivan	2·78	37	4·23	0·45	Station, Mackay	1·69	19	...	1·61
Maryborough ...	2·74	45	5·70	0·11	Warren	..	...	...	3·09

NOTE.—The averages have been compiled from official data during the periods indicated; but the totals for October this year and for the same period of 1915, having been compiled from telegraphic reports, are subject to revision.

GEORGE G. BOND,
Divisional Officer.

ASTRONOMICAL DATA FOR QUEENSLAND.

TIMES COMPUTED BY D. EGLINTON, F.R.A.S.

TIMES OF SUNRISE AND SUNSET AT BRISBANE AND THE PHASES OF THE MOON FOR THE THIRD FOUR MONTHS OF 1916.

Date.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.
1	6·3	5·33	5·29	5·47	4·59	6·5	4·46	6·28
2	6·2	5·33	5·28	5·48	4·58	6·6	4·46	6·29
3	6·1	5·34	5·27	5·48	4·57	6·7	4·46	6·29
4	6·0	5·34	5·26	5·49	4·56	6·8	4·46	6·30
5	5·59	5·35	5·25	5·49	4·55	6·8	4·46	6·31
6	5·58	5·36	5·24	5·50	4·55	6·9	4·46	6·31
7	5·57	5·36	5·23	5·50	4·54	6·10	4·46	6·32
8	5·56	5·37	5·22	5·51	4·54	6·10	4·46	6·33
9	5·55	5·37	5·20	5·51	4·53	6 11	4·47	6 34
10	5·54	5·38	5·19	5·52	4·52	6·11	4·47	6·34
11	5·53	5·38	5·18	5·52	4·52	6·12	4·47	6·35
12	5·52	5·39	5·17	5·53	4·51	6 12	4·47	6·36
13	5·51	5·39	5·16	5·53	4 51	6·13	4·47	6·36
14	5·50	5·40	5·15	5·54	4·50	6·13	4·48	6·37
15	5·48	5·40	5·14	5·54	4·50	6·14	4·48	6·38
16	5·47	5·41	5·13	5·55	4·50	6·15	4·48	6·38
17	5·46	5·41	5·12	5·56	4·49	6·16	4·49	6·39
18	5·45	5·41	5·11	5·56	4·49	6·17	4·49	6·40
19	5·43	5·42	5·10	5·57	4·48	6·18	4·49	6·40
20	5·42	5·42	5·9	5·57	4·48	6·19	4·50	6·41
21	5·41	5·43	5·8	5·58	4·47	6·20	4·50	6·41
22	5·40	5·43	5·7	5·58	4·47	6·21	4·51	6·42
23	5·38	5·44	5·6	5·59	4·47	6·22	4·51	6·42
24	5·37	5·44	5·5	5·59	4·47	6·23	4·52	6·43
25	5·36	5·44	5·5	6·0	4·47	6·23	4·52	6·43
26	5·35	5·45	5·4	6·1	4·46	6·24	4·53	6·44
27	5·34	5·45	5·3	6·1	4·46	6·25	4·53	6·44
28	5·33	5·46	5·2	6·2	4·46	6·25	4·54	6·45
29	5·32	5·46	5·1	6·3	4·46	6·26	4·55	6·45
30	5·30	5·47	5·0	6·3	4·46	6·27	4·55	6.46
31	...	...	5·0	6·4	...	...	4·56	6·46

The Phases of the Moon commence at the times stated below in Queensland, New South Wales, Victoria, and Tasmania.

			H.	M.	
5 Sept.	☾	First Quarter	2	26	p.m.
12 „	○	Full Moon	6	31	a.m.
19 „	☽	Last Quarter	3	35	p.m.
27 „	●	New Moon	5	34	„

The moon will be nearest the earth on the 9th at 11·24 p.m., and farthest from the earth on the 21st at 7·36 p.m.

4 Oct.	☾	First Quarter	9	0	p.m.
11 „	○	Full Moon	5	1	„
19 „	☽	Last Quarter	11	8	a.m.
27 „	●	New Moon	6	37	„

The moon will be nearest the earth on the 7th at 8·30 a.m., and on the 19th, at 3·12 p.m., at its farthest distance.

3 Nov.	☾	First Quarter	3	50	a.m.
10 „	○	Full Moon	6	18	„
18 „	☽	Last Quarter	8	0	„
25 „	●	New Moon	6	50	p.m.

The moon will be nearest the earth on the 1st at 4·48 a.m., and on the 28th at 5·42 a.m.; it will be farthest from the earth on the 16th at noon.

2 Dec.	☾	First Quarter	11	55	a.m.
9 „	○	Full Moon	10	44	p.m.
18 „	☽	Last Quarter	4	6	a.m.
25 „	●	New Moon	6	31	„
31 „	☾	First Quarter	10	7	p.m.

The moon will be farthest from the earth on the 14th at 6·48 a.m., and nearest on the 26th at 10·30 a.m.

For places west of Brisbane, but nearly on the same parallel of latitude—27½ degrees S.—add 4 minutes for each degree of longitude. For example, at Toowoomba the sun would rise and set about 4 minutes later than at Brisbane if its elevation (1,900 feet) did not counteract the difference in longitude. In this case the times of sunrise and sunset are nearly the same as those for Brisbane.

At St. George, Cunnamulla, Thargomindah, and Oontoo the times of sunrise and sunset will be about 18 m., 30 m., 38 m., and 49 minutes, respectively, later than at Brisbane at this time of the year.

At Roma the times of sunrise and sunset during September, October, November, and December may be roughly arrived at by adding 16 minutes to those given above for Brisbane.

The moonlight nights for each month can best be ascertained by noticing the dates when the moon will be in the first quarter and when full. In the latter case the moon will rise somewhat about the time the sun sets, and the moonlight then extends all through the night; when at the first quarter the moon rises somewhere about six hours before the sun sets, and it is moonlight only till about midnight. After full moon it will be later each evening before it rises, and when in the last quarter it will not generally rise till after midnight.

It must be remembered that the times referred to are only roughly approximate, as the relative positions of the sun and moon vary considerably.

[All the particulars on this page were computed for this Journal, and should not be reproduced without acknowledgment.]

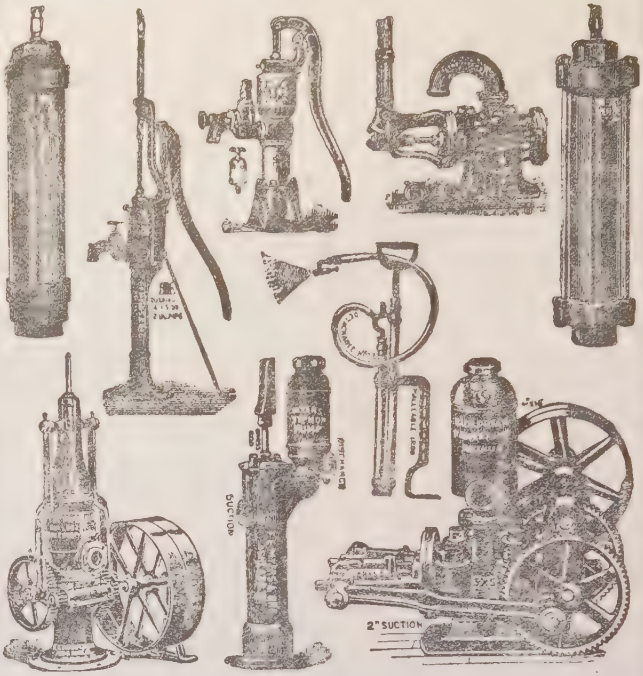
QUEENSLAND AGRICULTURAL JOURNAL

NEW SERIES.
JANUARY, 1916.

IMP. BUREAU OF ENTOM.

MYERS PUMPS

HAND, WINDMILL OR POWER



Hand or Windmill, Force or Lift Pumps, Submerged Cylinder Pumps, Pump Stands, Siphon and Tank Pumps, Power Pumps, Working Heads, Pumping Jacks, Cylinders etc. Spray Pumps—Bucket, Barrel or Power

W. A. PRESTON & CO.,

PUMPING MACHINERY MERCHANTS,

175-179 ALBERT STREET, BRISBANE.

See description on Back Cover.

The University of Melbourne.

VETERINARY SCHOOL.

Complete courses of instruction are conducted in all subjects for **the degree of Bachelor of Veterinary Science (B.V Sc.).**

Veterinary Surgeons possessing the above qualification **are eligible** for registration under the Veterinary Surgeons Act (Victoria) and **for veterinary appointments in the Commonwealth and State Services and in the Army Veterinary Corps.**

For full particulars apply—

The DIRECTOR,
Veterinary School, Parkville,
Victoria.

QUEENSLAND AGRICULTURAL JOURNAL

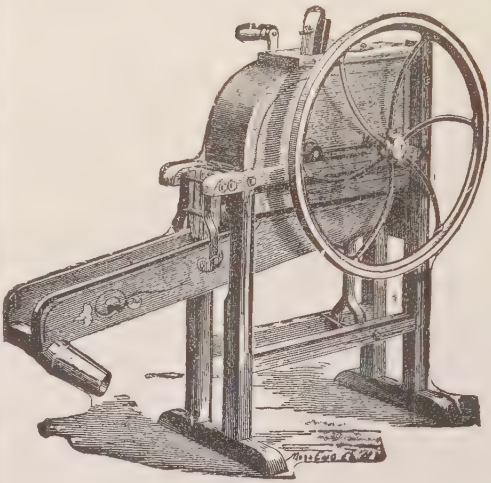
NEW SERIES.

FEBRUARY, 1916.

IMP. BUR.
20 MAR. 1916
ENTOM.

Corn Shellers.

The "Invincible" One Hole



This shows an Illustration of the One Hole Invincible Right-hand Corn Sheller with shaker and heavy fly wheel. It is very easy running.

Price only £4 0. 0.

cash with order.

Prices for larger power Machines, Chaff Cutters, Ploughs, Cultivators, Harrows, Horse Yokes, Engines, Pumps, or all Dairy Supplies, will be furnished you on application.

Write to-day for Our Illustrated Catalogues.

W. A. Preston & Co.,

175 Albert Street, Brisbane.

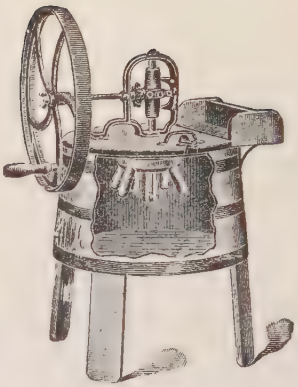
QUEENSLAND

AGRICULTURAL JOURNAL

NEW SERIES.

MARCH, 1916.

The O.K. Washing Machine



The BEST Semi-Rotary. Strongly built and works almost silently on steel revolving ball-bearings.

AS every person knows, washing day, especially in warm climates like ours, is the housewife's horror. To have to stand over the steaming tubs, rubbing and rubbing all day long, till your back feels as if it would break, and your temper as well, is undoubtedly one of the most trying parts of the good wife's daily duties.

The old adage, "Woman's work is never done," we all know to be only too true. Then why not try to lessen the burden in every possible way according to your means ?

We suggest a way out of the difficulty ; and if you will send for and study our pamphlet carefully, you will agree with us that our method is well worth giving a trial. Of course, every good woman knows how to wash.

Well, we want you to compare your way with ours, and that if you are interested in ours then **give the O.K. Washing Machine a trial.**

Sole Agents

W. A. PRESTON & CO.,

Dairy Machinery Merchants,

175-179 ALBERT STREET, BRISBANE.

QUEENSLAND AGRICULTURAL JOURNAL

NEW SERIES.
APRIL, 1916.

EXAMINED

DEPARTMENT OF LABOUR

(CONTROLLED BY THE STATE GOVERNMENT).

NO CHARGES—NO FEE.

Central Labour Exchanges have been established at Cairns, Townsville, Rockhampton, Bundaberg, Brisbane, Ipswich, and Toowoomba.

Employers who are in need of Labour, and Employees who are looking for work, may have the services of the "Free Exchanges" by using the Letter Cards supplied without charge at all Post Offices, or otherwise communicating their needs to the nearest Exchange.

WOMEN WORKERS.

An Employment Agency for all classes of Women Workers is conducted at 140 Adelaide Street, Brisbane. The Agency has for its purpose the better organisation of the Market for Women's Work. Employers are invited to call, write, or wire the Manageress, who will give immediate attention to all applications and inquiries. Women Workers desiring employment of any kind are invited to enrol their names at the Agency.

NO CHARGE IS MADE FOR THE SERVICES OF THE AGENCY.

The Agency deals with all classes of occupations for Women, including Home Work, Educational Work, and Employment in private houses, Offices, Shops, Hotels, Restaurants, Workrooms, and Factories.

W. R. CRAMPTON, Director of Labour.

Sow the Best Seed!

It costs no more than inferior and you are ***SURE*** *of getting worth-while results. TAYLOR'S Seeds are always of the highest standard, always reliable—we never handle inferior stocks.*

RE-CLEANED SEED GRAIN.

We have prime samples of re-cleaned SEED WHEAT, Algerian Oats, Tartarian Oats, Cape Barley, Skinless Barley, Rye Corn, &c.

MAURITIUS BEANS.

Largely grown for Green Manure, and for which it has few equals. We are offering Mauritius Beans at very attractive prices.

CITRUS TREES.

We are now ready with large stocks, including all the BEST varieties. All well grown healthy trees. We have Fruit Trees of all kinds. Write for prices and any other information. Let us send you our Farm and Garden Manual, post free.

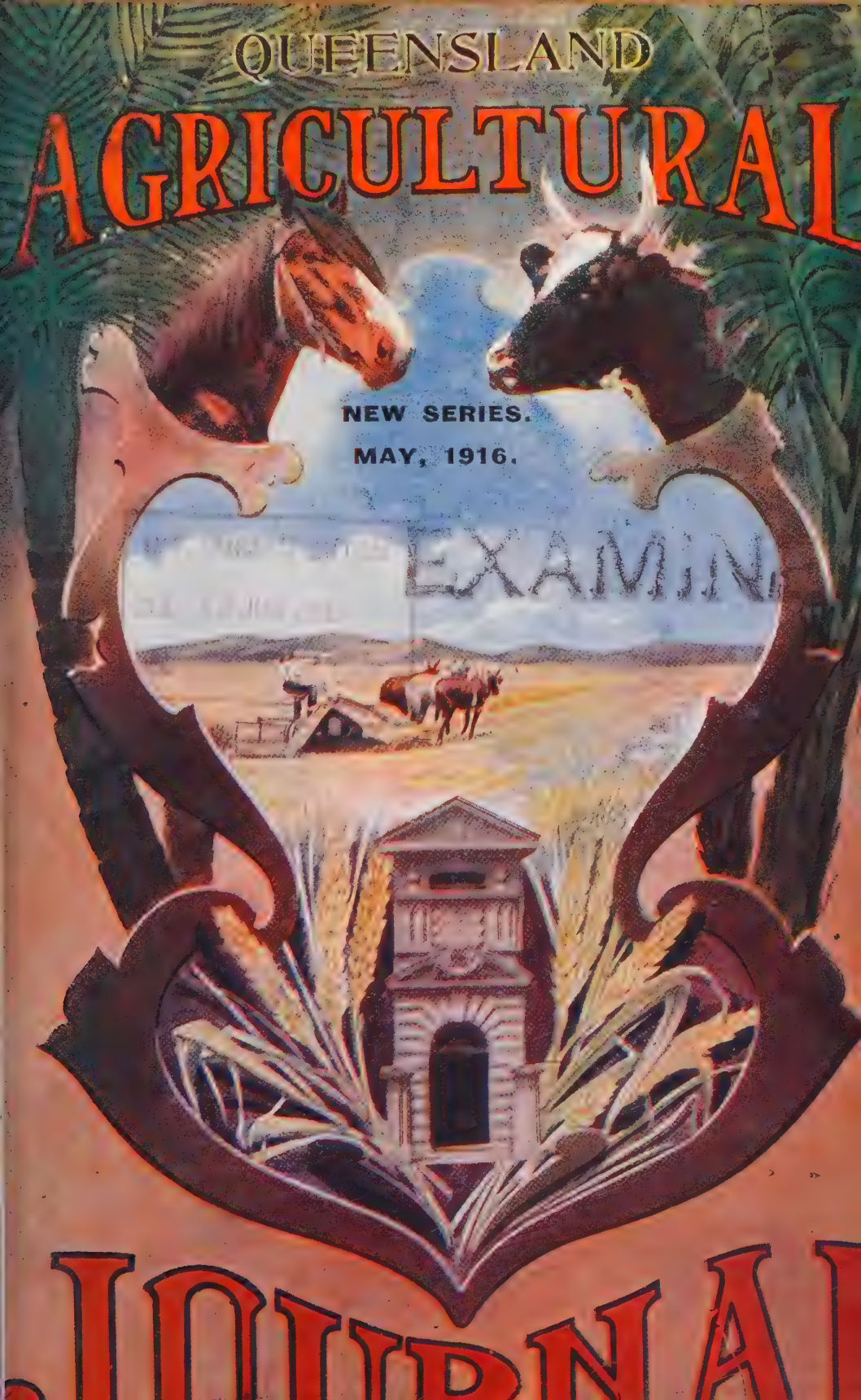
CHAS. TAYLOR & CO., *"THE LEADING SEEDSMEN,"*

110-116 ROMA STREET, BRISBANE (opposite Markets).

QUEENSLAND AGRICULTURAL JOURNAL

NEW SERIES.

MAY, 1916.



QUEENSLAND AGRICULTURAL JOURNAL

NEW SERIES.
JUNE, 1916.

IMP. BUREAU ENTOM.
Ent. 25 JUL 1916

Queensland.

Department of Agriculture and Stock.

Vol. VI. JULY, 1916.

IMP. BUR.
AUG. 1916
ENTOM.

Queensland Agricultural Journal.

Edited by
A. J. BOYD, F.R.G.S.Q.

THE WORKERS' COMPENSATION ACT OF 1916.

APPLICATION FORMS

For POLICIES under the above ACT

MAY NOW BE OBTAINED

from all Clerks of Petty Sessions, at all Railway Stations, and at all Branches and Agencies of the Government Savings Bank.

THE INSURANCE COMMISSIONER will be prepared to grant and issue Accident Insurance Policies for the purposes of the Act as from the date of the commencement of the Act, which it is anticipated will be the 1st July, 1916. Lodgment with, or posting to, the Insurance Commissioner of an application will act as a cover for the policy applied for, from the date of the commencement of the Act until the policy is issued.

JOHN GOODWYN,
The Insurance Commissioner.

STATE ACCIDENT INSURANCE OFFICE,
Parbury House, Eagle Street, Brisbane.

Queensland Railways. **Ticket Arrangements.**

BRISBANE EXHIBITION, 14th to 19th August, 1916.

Cheap Excursion Tickets will be issued to Brisbane on the undermentioned dates :—

From Stations distant more than 200 miles, from Thursday, 3rd, to Tuesday, 15th August (both inclusive), provided the Train the passenger travels by is due to arrive at Brisbane not later than mid-day on Wednesday, 16th August.

From Stations distant not less than 100 miles, and not exceeding 200 miles, from Wednesday, 9th, to Thursday, 17th August (both inclusive), provided the Train the passenger travels by is due to arrive at Brisbane not later than mid-day on Thursday, 17th August.

SOME OF THE FARES:—

	1st Class s. d.	2nd Class s. d.		1st Class s. d.	2nd Class s. d.
Longreach ..	85 6	57 0	Roma	46 9	31 3
Blackall ..	83 6	55 9	Dalby	28 3	18 9
Rockhampton ..	53 6	35 9	Wallan-garra ..	37 3	25 0
Gladstone ..	47 9	31 9	Warwick ..	29 0	19 3
Cunnamulla ..	71 9	48 0	Dirranbandi ..	55 3	37 0
Cheepie ..	69 0	46 0	Thallon ..	52 0	34 9
Charleville ..	61 3	40 9	Goondiwindi ..	43 9	29 3

Children Half-price.

Tickets will be available for return for distances of 51 miles and over for ONE MONTH.
Further particulars will be advertised later.

By Order of The Commissioner for Railways.

ARTHUR J. CROWTHER,
Secretary.

Queensland.

Department of Agriculture and Stock.

Vol. VI. AUGUST, 1916.

Queensland Agricultural Journal.

Edited by
A. J. BOYD, F.R.G.S.Q.

THE WORKERS' COMPENSATION ACT OF 1916.

APPLICATION FORMS

For POLICIES under the above ACT

MAY NOW BE OBTAINED

from all Clerks of Petty Sessions, at all Railway Stations, and at all Branches and Agencies of the Government Savings Bank.

THE INSURANCE COMMISSIONER will be prepared to grant and issue Accident Insurance Policies for the purposes of the Act as from the date of the commencement of the Act, which it is anticipated will be the 1st July, 1916. Lodgment with, or posting to, the Insurance Commissioner of an application will act as a cover for the policy applied for, from the date of the commencement of the Act until the policy is issued.

JOHN GOODWYN,
The Insurance Commissioner.

STATE ACCIDENT INSURANCE OFFICE,
Parbury House, Eagle Street, Brisbane.

Queensland Railways. **Ticket Arrangements.**

BRISBANE EXHIBITION, 14th to 19th August, 1916.

Cheap Excursion Tickets will be issued to Brisbane on the undermentioned dates :—

From Stations distant more than 200 miles, from Thursday, 3rd, to Tuesday, 15th August (both inclusive), provided the Train the passenger travels by is due to arrive at Brisbane not later than mid-day on Wednesday, 16th August.

From Stations distant not less than 100 miles, and not exceeding 200 miles, from Wednesday, 9th, to Thursday, 17th August (both inclusive), provided the Train the passenger travels by is due to arrive at Brisbane not later than mid-day on Thursday, 17th August.

SOME OF THE FARES:—

	1st Class s. d.	2nd Class s. d.		1st Class s. d.	2nd Class s. d.
Longreach ..	85 6	57 0	Roma	46 9	31 3
Blackall ..	83 6	55 9	Dalby	28 3	18 9
Rockhampton ..	53 6	35 9	Wallan-garra ..	37 3	25 0
Gladstone ..	47 9	31 9	Warwick ..	29 0	19 3
Cunnamulla ..	71 9	48 0	Dirranbandi ..	55 3	37 0
Cheepie ..	69 0	46 0	Thallon ..	52 0	34 9
Charleville ..	61 3	40 9	Goondiwindi ..	43 9	29 3

Children Half-price.

Tickets will be available for return for distances of 51 miles and over for ONE MONTH.
Further particulars will be advertised later.

By Order of The Commissioner for Railways.

ARTHUR J. CROWTHER,
Secretary.

Queensland.

Department of Agriculture and Stock.

Vol. VI. SEPTEMBER, 1916.

Queensland Agricultural Journal.

Edited by
A. J. BOYD, F.R.G.S.Q.

Queensland.

Department of Agriculture and Stock.

Vol. VI. OCTOBER, 1916.

IMP. BUR.
24 NOV 1916
ENTOM.

Queensland Agricultural Journal.

Edited by
A. J. BOYD, F.R.G.S.Q.

Queensland.

Department of Agriculture and Stock.

Vol. VI. NOVEMBER, 1916.

EXAMINED

Queensland Agricultural Journal.

I.S.P. LIB.
P - JAN. 1917
ENTOM.

Edited by
A. J. BOYD, F.R.G.S.Q.

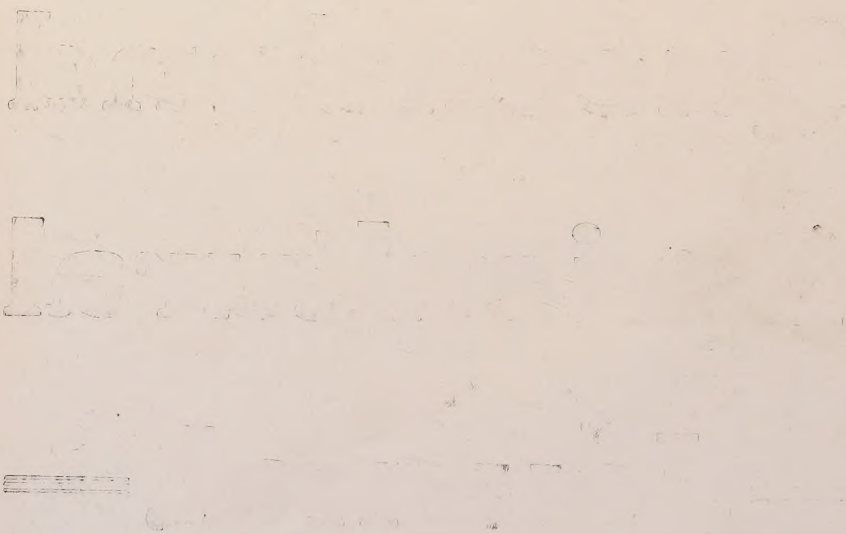
Queensland.

Department of Agriculture and Stock.

IMP. BUR.
23 JAN 1917
ENTOM.

Vol. VI. DECEMBER, 1916.

EXD.

Queensland Agricultural Journal.

Edited by
A. J. BOYD, F.R.G.S.Q.